FM 30-20
copy 1
S/S Feb 72

FM 30-20

DEPARTMENT OF THE ARMY FIELD MANUAL

AERIAL SURVEILLANCE-RECONNAISSANCE FIELD ARMY

THE ARMY LIBRARY
WASHINGTON, D. C.

HEADQUARTERS, DEPARTMENT OF THE ARMY

APRIL 1969

TAGO 7075A

FIELD MANUAL
NO. 30-20

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., *25 April 1969*

AERIAL SURVEILLANCE-RECONNAISSANCE, FIELD ARMY

		Paragraph	Page
CHAPTER 1.	INTRODUCTION	1-1—1-4	1-1
2.	G2 AIR ORGANIZATION AND FUNCTIONS		
Section I.	Organization	2-1—2-1	2-1
II.	Functions	2-3, 3-4	2-1
CHAPTER 3.	CONCEPT OF AERIAL SURVEILLANCE AND RECONNAISSANCE EMPLOYMENT	3-1—3-6	3-1
4.	AERIAL SURVEILLANCE AND RECONNAISSANCE MISSIONS		
Section I.	Type missions	4-1—4-6	4-1
II.	Collection means	4-7—4-11	4-2
CHAPTER 5.	AERIAL SURVEILLANCE AND RECONNAISSANCE PLANNING, OPERATIONS, AND COORDINATION		
Section I.	General planning	5-1—5-5	5-1
II.	Specific planning	5-6, 5-7	5-4
III.	Request procedures	5-8—5-10	5-6
IV.	Aircraft and sensor capabilities	5-11, 5-12	5-10
V.	Operational aids	5-13—5-26	5-12
VI.	Coordination	5-27—5-30	5-21
CHAPTER 6.	COMMUNICATIONS	6-1—6-5	6-1
7.	MILITARY INTELLIGENCE BATTALION, AIR RECONNAISSANCE SUPPORT, FIELD ARMY		
Section I.	Mission, organization, and functions	7-1—7-3	7-1
II.	Concept of employment	7-4—7-8	7-3
III.	Planning and operations	7-9, 7-10	7-5
CHAPTER 8.	AVIATION AERIAL SURVEILLANCE COMPANY		
Section I.	Mission, organization, capabilities, and limitations	8-1—8-6	8-1
II.	Command, control, and communication	8-7—8-10	8-4
III.	Planning	8-11—8-15	8-5
IV.	Techniques of surveillance and reconnaissance operations	8-16—8-20	8-9
CHAPTER 9.	IMAGERY INTERPRETATION		
Section I.	General	9-1—9-4	9-1
II.	Tactical uses of imagery	9-5, 9-6	9-2
III.	Imagery interpretation reports	9-7—9-10	9-3
IV.	Target folders	9-11—9-13	9-8
V.	Security classification of aerial imagery	9-14—9-16	9-8
CHAPTER 10.	BRIEFINGS AND DEBRIEFINGS		
Section I.	General	10-1—10-4	10-1
II.	Briefings	10-5—10-7	10-1
III.	Debriefings	10-8—10-10	10-4
IV.	Records and reports	10-11, 10-12	10-4

*This manual supersedes FM 30-20, 14 August 1967 and FM 30-20-1 (Test), 9 December 1966.

		Paragraph	Page
CHAPTER 11.	AERIAL SURVEILLANCE AND RECONNAISSANCE IN STABILITY OPERATIONS		
Section I.	General	11-1—11-3	11-1
II.	Aerial surveillance, reconnaissance operations, and target acquisition	11-4—11-9	11-2
APPENDIX A.	REFERENCES		A-1
B.	ABBREVIATIONS		B-1
C.	EXAMPLE OF A G2 AIR COLLECTION PLAN		C-1
D.	EXAMPLE OF AERIAL SURVEILLANCE AND RECONNAISSANCE APPENDIX, FIELD ARMY		D-1
E.	MINIMUM SCALES FOR INTERPRETATION AND IDENTIFICATION		E-1
F.	TITLING OF AIR RECONNAISSANCE, AIR SURVEY, AND MAPPING PHOTOGRAPHY		F-1
INDEX			Index-1

CHAPTER 1
INTRODUCTION

1–1. Purpose

This manual provides guidance to commanders, staffs, and intelligence personnel concerned with the collection, processing, and use of intelligence information gained by aerial means. It sets forth doctrine, tactics, and techniques for the planning, coordination, and employment of all aerial surveillance and reconnaissance resources.

1–2. Scope

a. This manual outlines the procedures for determining aerial surveillance and reconnaissance requirements, for requesting aerial reconnaissance and surveillance support, and for planning and coordination incident to the collection of aerial reconnaissance and surveillance support, and for planning and coordination incident to the collection of aerial reconnaissance and surveillance information. It also discusses organizational and operational aspects of the Army's and other services' aerial surveillance and reconnaissance community. This manual includes only those details and techniques described in other manuals which are necessary for complete understanding and continuity.

b. Mechanical aspects of processing and disseminating the information obtained by aerial means are discussed in this manual. The evaluation, interpretation, and use of the product resulting from the employment of aerial surveillance and reconnaissance collection means are discussed in FM 30–5.

c. The technical aspects of the equipment used in aerial surveillance and reconnaissance and the procedures utilized by aerial surveillance and reconnaissance specialists in the performance of their duties are not discussed in detail in this manual. This information is contained in appropriate technical manuals and other published media available to specialists and technicians responsible for the employment of the equipment and procedures used in aerial surveillance and reconnaissance.

d. The material in this manual is applicable to nuclear and nonnuclear warfare, and internal defense/development operations under all conditions, including the employment of chemical, biological, and radiological agents.

e. Within this manual, all discussion pertaining to the duties, functions, and responsibilities of the G2 or G2 Air will apply equally to the S2 or S2 Air in organizations below division level, unless otherwise stated.

f. Within this manual, aerial surveillance and aerial reconnaissance are not treated as mutually exclusive intelligence gathering activities. When the term aerial surveillance or aerial reconnaissance is used separately, it is intended to convey which of the two activities will receive the major emphasis; however, it should not be construed as exluding the other activity, unless otherwise stated.

g. The material presented herein is applicable to general war, limited war, and cold war situations, to include stability operations in both nuclear and nonnuclear warfare environments. This manual is in consonance with the following International Standardization Agreements: STANAG 2029, SEASTAG 2029, and SOLOG 34R (Method of Describing Ground Locations, Areas and Boundaries); STANAG 2102 (Offensive Air Support Operations Message Formats); STANAG 2208 and SEASTAG 2208 (Place Name Spelling of Maps and Charts); SEASTAG 3189 and STANAG 3189 (Tilting for Air Reconnaissance, Air Survey and Mapping Photography); STANAG 3277 and SEASTAG 3277 (Air Reconnaissance Request

Form) ; STANAG 337 (Air Reconnaissance Intelligence Report Forms).

h. Users of this manual are encouraged to submit recommendations to improve its clarity or accuracy. Comments should be keyed to the specific page, paragraph, and line number of the text in which the change is recommended. Reasons should be provided for each comment to insure understanding and complete evaluation. Comments should be forwarded direct to the Commanding Officer, U.S. Army Combat Developments Command Intelligence Agency, Fort Holabird, Md. 21219. Originators of proposed changes which would constitute a significant modification of approved Army doctrine may send an information copy, through command channels, to the Commanding General, United States Combat Developments Command, Fort Belvoir, Virginia 22060, to facilitate review and follow up.

1–3. Responsibilities

a. Each commander is responsible for the intelligence activities of his command as defined in FM 100–5. To accomplish these activities he delegates the functions of intelligence planning, coordination, and production to his principal staff assistant for intelligence—his G2 or S2.

b. In the accomplishment of his staff responsibilities for all intelligence functions, the G2/S2 must properly plan, employ, and control or coordinate the aerial surveillance and reconnaissance capabilities at hand or available to meet his requirements. At brigade level or lower, these are functions of the S2 or assistant S2. At division level and above, these functions are performed for the G2 by his principal assistant for aerial surveillance and reconnaissance operations—the G2 Air. A detailed discussion of the G2 Air organization and functions is contained in chapter 2.

1–4. Means of Collection and Processing

a. Collection Means.

(1) Organic Army aerial collection means include airplanes, helicopters, pilots, aerial observers, sensors, and sensor equipment operators which can collect information from aerial platforms out to the operational limits of the aircraft or sensors. Present collection capabilities include visual observation, photography, radar, infrared imagery, and electronic surveillance.

(2) Other services, principally the Air Force but also the Navy and Marine Corps, when included as part of a joint operation, provide the aerial collection means required to increase the area of coverage capabilities of the Army and extend that coverage beyond the limits of organic Army aerial collection means. Present collection capabilities include visual observation, photography, radar and infrared imagery, radar mapping, electronic reconnaissance, and weather reconnaissance.

b. Collection and Processing Agencies.

(1) The aviation aerial surveillance company is a specialized organization containing Army aircraft, sensors, and necessary personnel. The company provides the Army with an organic means of procuring intelligence information in immediate response to the commander's needs. A detailed discussion of this organization is contained in chapter 8.

(2) The Military Intelligence Battalion, Air Reconnaissance Support (MIBARS), Field Army, is a specialized organization created to provide the Army an organic means of interpreting, processing, and disseminating intelligence information from aerial reconnaissance missions flown by the Air Force or other services in support of the Army's requirements. It also provides liasion officers to the reconnaissance elements of the supporting tactical Air Force. A detailed discussion of this organization is contained in chapter 7.

(3) Contained within the military intelligence organization supporting the field army, corps, division, separate brigade, and armored cavalry regiment are imagery interpretation (II) sections that directly support their respective headquarters G2 or S2 staff section. This II support is immediately responsive to the commander's needs and can provide all II functions. A detailed discussion of II functions is contained in chapter 9.

(4) The ASA provides tactical units to conduct the electronic warfare (EW) portion of aerial reconnaissance and surveillance operations in support of Army field commands. Passive electronic countermeasures (PECM)

and the electronic counter-countermeasures (ECCM) operations will be immediately responsive to the commander's needs and will function under staff supervision of the G2 or S2. A detailed discussion of the U.S. Army Security Agency EW functions is contained in FM 32–20. A detailed discussion of other ASA functions, its tactical organization, employment, control, and command relationship is contained in FM 32–10.

CHAPTER 2
G2 AIR ORGANIZATION AND FUNCTIONS

Section I. ORGANIZATION

2–1. General

a. The planning and coordination of aerial surveillance and reconnaissance operations of the command are the staff responsibilities of the ACofS, G2, or of the S2 below division level.

b. At division and higher echelons, the G2 Air is responsible to the G2 for supervising the collection and dissemination of information concerning the location, strength, disposition, movement, and military installations of the enemy as visually observed and sensed from the air and to advise the G2 on matters pertaining to aerial surveillance and reconnaissance employment. To accomplish these responsibilities, he formulates policies and procedures for use in selecting missions; exercises staff supervision over organic Army aerial surveillance and reconnaissance agencies; requests aerial surveillance and reconnaissance support from other services; receives, consolidates, and assigns priorities to aerial surveillance and reconnaissance requests; disseminates intelligence reports resulting from aerial surveillance and reconnaissance missions; and performs necessary staff coordination.

2–2. Location and Organization

a. General. G2 Air personnel are located at all command echelons from field army through division. At echelons below division, G2 Air functions are performed by the S2 or his assistant, when provided. As an exception, separate armored, infantry and mechanized brigades have organic S2 Air personnel.

b. Location. The tactical air support element (TASE) of the tactical operations center (TOC) at field army, corps, and division levels consists of collocated G2 Air duty teams and G3 Air representatives. The TASE normally is located with the fire support element (FSE) and airspace control center (ACE) which are also part of the TOC. Though collocated, the G2 Air, G3 Air, FSE, and ACE elements are not combined, but each remains under the direct control and authority of its own team chief and its respective general or special staff officer.

c. Organization. The G2 Air sections at field army, corps, and division are organized into duty teams to provide 24-hour operation. Actual composition of each duty team is at the discretion of the G2 Air; however, at field army level it is desirable that a long-range planning section and a duty team for the alternate field army tactical operations center (FATOC) be organized.

d. Independent Operations. When organic divisional brigades are assigned to independent operations for prolonged periods of time, provision should be made for inclusion of an S2 Air to augment the brigade S2 staff.

Section II. FUNCTIONS

2–3. General Functions

General functions of the G2/S2 Air at all echelons include the following:

a. Advises the G2/S2 on matters pertaining to aerial surveillance and reconnaissance.

b. Recommends policies and procedures for the conduct of aerial surveillance and reconnaissance.

c. Prepares the aerial surveillance and reconnaissance SOP.

d. Prepares the aerial surveillance and reconnaissance plan in coordination with the ACE.

e. Assists other staff sections in establishing aerial surveillance and reconnaissance requirements to include special studies.

f. Processes aerial surveillance and reconnaissance requests; notifies the ACE; approves or disapproves requests from subordinate elements and the staff at his own echelon.

g. Establishes a priority system for aerial surveillance and reconnaissance requests and monitors all priorities assigned to requests submitted within the command.

h. Maintains and disseminates information on the capabilities and allocations of the aerial surveillance and reconnaissance support.

i. Disseminates information resulting from aerial surveillance and reconnaissance operations.

j. Disseminates information resulting from aerial surveillance and reconnaissance operations.

k. Exercises staff supervision over Army aerial surveillance and reconnaissance elements organic to, or in direct support of, his command.

l. Coordinates with G3/S3 Air, ACE, and FSE in the planning of close air support and interdiction and aerial surveillance and reconnaissance missions.

m. Coordinates with the G3/S3 Air, ACE, and FSE for necessary shifting or lifting of supporting fires that may interfere with the accomplishment of an aerial surveillance or reconnaissance mission.

n. Coordinates with the appropriate Air Force elements those requests for immediate aerial surveillance and reconnaissance missions to be accomplished by the Air Force.

o. Provides briefing and debriefing personnel directly engaged in aerial surveillance and reconnaissance operations.

p. Supervises the imagery interpretation effort at his echelon.

2–4. Specific Functions

The G2/S2 Air accomplishes specific functions relating to his level of assignment as follows:

a. Field Army/Independent Corps G2 Air.

(1) Coordinates the scheduling of available aerial surveillance and reconnaissance support with the tactical air control center (TACC) and with Navy, Marine and organic Army aerial surveillance and reconnaissance units if provided to the command.

(2) Conducts appropriate portions of the daily planning conference with TACC and with representatives for Navy, Marine, and organic Army support, if provided.

(3) Supervises the employment of the MIBARS.

(4) Disseminates intelligence concerning the enemy air defense capability to the TACC and other aerial surveillance and reconnaissance units, if provided, and intelligence concerning enemy air operations capabilities to the TOC.

(5) Insures the availability of current initial record imagery (basic cover) (para 4–12) of the field army area of interest, and dissemination of appropriate portions of the initial record coverage to subordinate units.

(6) Disseminates to the TACC and other flying units in support, to the MIBARS and to the field army G2 element at the TASE, intelligence reports on enemy ground activities.

b. Corps G2 Air.

(1) Coordinates preplanned missions between division and field army G2 Air.

(2) Approves or disapproves immediate aerial surveillance and reconnaissance requests and coordinates those approved with the direct air support center (DASC), or the aerial surveillance company.

(3) On approved immediate requests flown by the Air Force, insures that the MIBARS detachment, collocated with the AF reconnaissance squadron scheduled for the mission, receives the information required for briefing the flying crew and assisting the detachment's interpretation effort.

(4) Exercises staff supervision over the corps aerial surveillance company for the corps G2.

c. Division G2 Air.

(1) Monitors immediate aerial surveillance and reconnaissance requests of subordinate elements and indicates approval or disapproval to the division tactical air control party (TACP).

(2) Coordinates the employment of the corps aerial surveillance company ground sensor terminals, located within the division area,

with the operations of the imagery interpretation support avaliable to the division.

(3) Coordinates with the G3 on the utilization of organic or direct support nonreconnaissance aircraft of the division for visual missions of high priority that are within the capability of the aircraft to accomplish.

(4) Integrates the command's aerial and ground surveillance and reconnaissance plans.

(5) Exercises staff supervision over organic or attached aerial surveillance units, when provided.

d. Separate Armored, Mechanized, and Infantry Brigades. The functions of the S2 Air for these commands are comparable to those accomplished by the division G2 Air.

CHAPTER 3

CONCEPT OF AERIAL SURVEILLANCE AND RECONNAISSANCE EMPLOYMENT

3–1. General

Aerial surveillance and reconnaissance missions are performed in support of the field army and its subordinate units by aviation units organic to the Army, the Tactical Air Force (TAF), or other supporting services. The TAF or air arm of other supporting services provides a large portion of the total aerial surveillance and reconnaissance effort required by the field army; however, whenever organic Army means can more effectively or more responsively meet the requester's needs, they should be used within the limitations of their aircraft and sensors. As specific surveillance or reconnaissance requirements are developed at any echelon, they are either accomplished with the means organic to that echelon or submitted to a higher or subordinate headquarters for accomplishment.

3–2. Support by Tactical Air Force

Tactical air reconnaissance elements of the Air Force normally support both Army and Air Force intelligence requirements. Tactical air reconnaissance is one of the primary sources of intelligence information available to the Army commander for planning purposes and for support of immediate operational requirements. Tactical air reconnaissance units are capable of performing all missions within the entire spectrum of air reconnaissance, both day and night, and through most weather conditions. The Air Force normally provides a tactical air reconnaissance wing, consisting of four reconnaissance squadrons, in support of a field army. Normally, the reconnaissance wing will also have a reconnaissance technical squadron that has a photo processing and imagery interpretation capability. Usually, this capability is concentrated at the reconnaissance wing level; when required, however, personnel and equipment from this squadron may be collocated with one or more of the reconnaissance squadrons to provide direct support. The reconnaissance squadrons usually operate from inproved airfields dispersed throughout the theater of operations. Each squadron may be equipped to provide only a portion of the total reconnaissance capability; i.e., one may be a day squadron for visual and photographic reconnaissance, one a night squadron for infrared and radar reconnaissance, and one a weather-electronic reconnaissance squadron for the collection of weather data and enemy electronic order of battle. Conversely, each squadron may be equipped to perform all of these functions on a continuous basis or to provide a major capability in one area and a limited capability in another area. The composition and mix of reconnaissance squadrons is the responsibility of the senior TAF commander.

3–3. Navy and Marine Corps Support

a. When Navy or Marine Corps Air units provide the preponderance of air support to Army operations, operational procedures will be established by the joint force commander, but so far as possible, these procedures should follow general doctrine as presented in this manual.

b. Navy and Marine Corps air reconnaissance units possess the necessary aircraft and imagery-producing sensors to accomplish the same types of missions as those performed by the TAF. These units also have an organic capability for processing and interpreting imagery returns.

c. Depending upon operational requirements and the volume of support being provided, Navy and Marine Corps imagery may be delivered to the land airbases at which the MIBARS detachments are located. A portion of the MIBARS personnel, to include entire detachments, may

be located aboard ship or at a Marine airbase to aid in processing and interpreting exposed imagery. If necessary, the MIBARS headquarters has the capability of creating a fifth MI Detachment (air reconnaissance support) (ARS)) for special operations as discussed in chapter 7. In addition, a separate MI detachment (ARS), not organically part of an existing MIBARS organization, can be created to fill a special requirement to operate with a Navy or Marine air reconnaissance unit at the same time that the existing MIBARS organization continues to function in support of a TAF reconnaissance wing.

d. Navy and Marine Corps air reconnaissance units may require Army liaison officer support to be located with their flying elements. When required, liaison officers can be procured by using imagery interpretation officers out of the imagery interpretation sections within MIBARS or out of the imagery interpretation section organic to the military intelligence organization in support of the Army combat units.

3-4. Allied Support

When supported by aerial reconnaissance elements of allied nations, commanders concerned will use mutually acceptable procedures and techniques.

3-5. Army Aviation Support

Army aviation units of the armored cavalry regiment, missile command, division, corps, and field army are all capable of performing visual aerial surveillance missions. In addition, the corps aerial surveillance company and the aerial surveillance platoon organic to the airmobile division can provide permanent record imagery from photographic, radar, and infrared sensors.

3-6. Aerial Surveillance Intelligence Cycle

a. General. The aerial surveillance intelligence cycle (fig. 3-1) is based on the determination of a specific requirement for information and the action necessary to fulfill the requirement at any echelon of command. The G2 Air may initiate a requirement, or he may receive it from another staff section or from a subordinate unit. As the G2 Air, he is the staff supervisor of the request until action upon it has been completed and the originator has been so advised. At each echelon the G2 Air action sequence follows a similar pattern. Variations at each echelon involve personnel, equipment, and administrative detail, but the same thought process and sequence of action are used. Close staff coordination with supporting units must be effected by the G2 Air to obtain maximum return from the effort expended. Development of a specific unit SOP will facilitate and expedite the performance of these functions.

b. Field Army and Independent Corps Aerial Surveillance Intelligence Cycle. The G2 Air at field army level normally will perform as a staff supervisor and coordinator of the aerial surveillance and reconnaissance effort of the field army. Normally he will process only those requests which originate at field army level or those which cannot be accomplished at corps level and below and are forwarded to field army for accomplishment.

(1) *Air request control.* Requests received or originated at field army are approved by the G2 Air. Upon approval of each request, a priority is established. An approved request may be accomplished by organic means or forwarded to TAF (TACC). Close coordination between the G2 Air and TACC is necessary to determine the priority in which requests are accomplished by the Air Force. When the TACC designates a unit to fly the mission, the G2 Air is notified. The G2 Air then furnishes the MIBARS with the detailed mission information.

(2) *Mission accomplishment.* Once the requirement is furnished the MIBARS, the actions to coordinate, receive, and interpret the resultant imagery are the responsibilities of the Army element even though the mission is flown by an Air Force element. The procedures employed by the MIBARS to complete the collection of intelligence information are covered in chapter 7.

(3) *Intelligence production and dissemination.* The field army G2 Air directs and supervises the production and dissemination of intelligence information resulting from aerial reconnaissance or surveillance missions. He insures that the information is forwarded to the re-

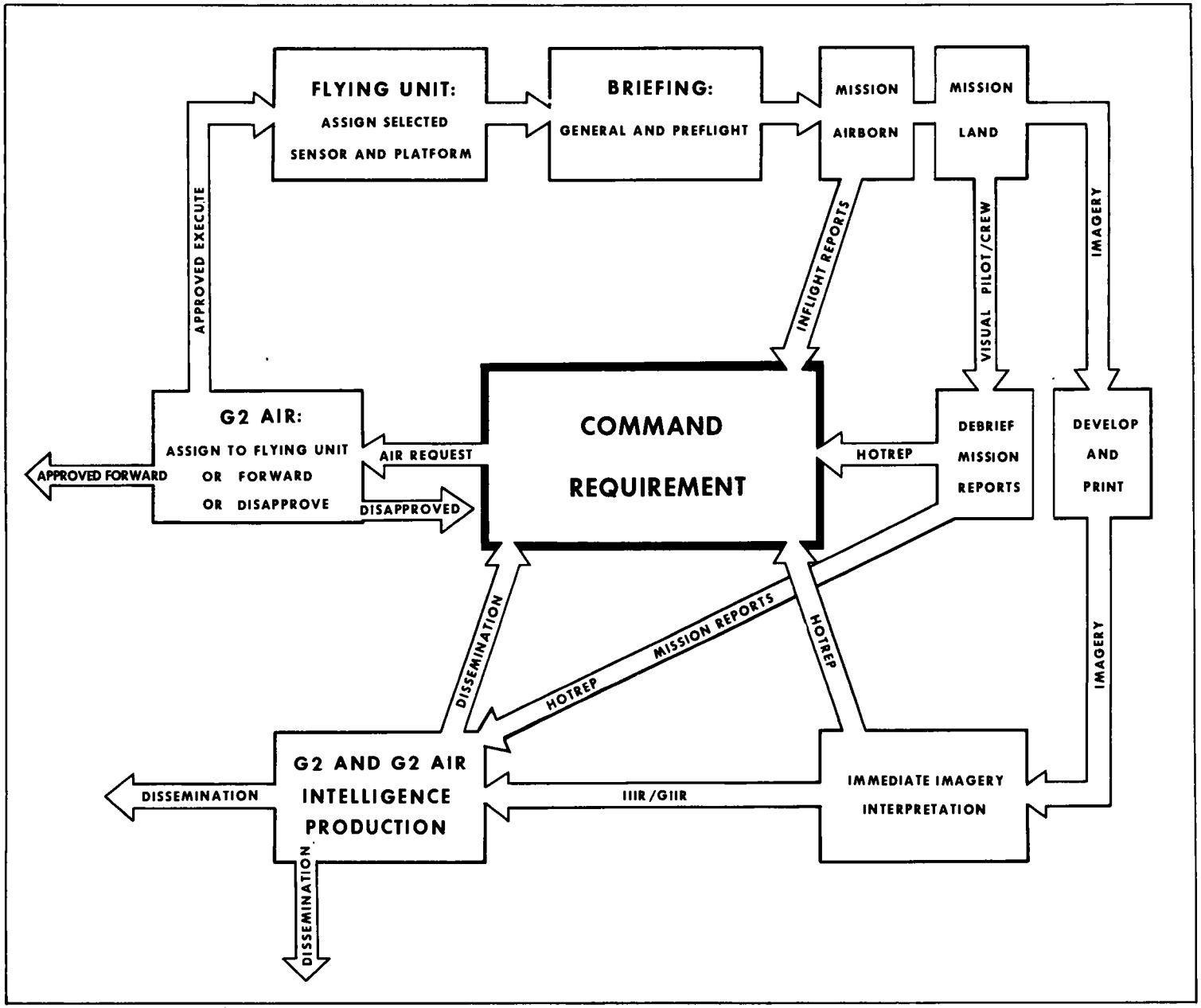


Figure 3–1. Aerial surveillance intelligence cycle.

questing unit and other appropriate activities and the field Army G2 to permit its integration with other intelligence information available to the G2.

c. Corps Aerial Surveillance Intelligence Cycle. The aerial surveillance intelligence cycle (fig. 3–1) at corps is comparable to that of the field army. The corps normally has Air Force reconnaissance missions allocated to accomplish immediate aerial surveillance and reconnaissance missions only. The G2 Air at corps develops his aerial collection plan based on the corps commander's requirements and the integration of approved requests received from subordinate elements. The G2 Air determines which missions can be accomplished by organic Army aircraft and assigns them to the corps aviation aerial surveillance company for accomplishment. Preplanned missions requiring Air Force support are forwarded to the G2 Air at field army for approval and incorporation into the field army surveillance plan. Immediate missions requiring Air Force support are coordinated with the DASC at corps and accomplished as part of the immediate missions allocated to the corps. The production and dissemination of the resultant intelligence are similar to those procedures used in the field army aerial surveillance intelligence cycle. The actions taken by the corps aerial surveillance company to coordinate, receive, and interpret the imagery it collects are discussed in chapter 8.

d. Division Aerial Surveillance Intelligence Cycle. The aerial surveillance intelligence cycle at division is similar to that at corps. To the maximum extent possible, the division G2 Air attempts to accomplish requests from subordinate elements using his organic capabilities; e.g., visual aerial surveillance for all divisions, the aerial surveillance platoon in the airmobile division. When this is not possible, he incorporates approved requests into the division surveillance plan which is forwarded to corps for approval and accomplishment within the resources of higher headquarters. Division missions flown by organic corps aircraft are coordinated beforehand so that ground sensor terminals and division imagery interpretation support may be alerted to receive the results of the mission as it is flown and the results processed and interpreted. Processing of GST IR film can be accomplished by division signal assets.

e. Aerial Surveillance Intelligence Cycle for Other Units.

The pattern for obtaining information through the use of aerial vehicles is similar at all echelons having organic aerial surveillance vehicles. Units without aerial surveillance means submit requests to the next higher echelon for appropriate action.

CHAPTER 4
AERIAL SURVEILLANCE AND RECONNAISSANCE MISSIONS

Section I. TYPE MISSIONS

4-1. General

There are two broad categories of missions—aerial surveillance missions and aerial reconnaissance missions. Each type of mission is performed for a similar purpose; however, planning and implementation differ.

4-2. Aerial Surveillance Missions

A surveillance mission is characterized by the greater expanse of terrain that it covers and the repetitiousness with which it is flown. Aerial surveillance is continuous over the entire battlefield or area of interest. Generally it is conducted without regard to specific targets though major areas of interest may be emphasized. A surveillance mission normally is performed with a large area coverage sensor such as radar, or by visual observation from higher altitudes so that a large ground area can be observed at all times. The majority of aerial surveillance missions will be flown on a repetitive basis, with individual flights overlapping to insure complete coverage of the area. Both radar and visual surveillance flights can be flown along or behind the forward edge of the battle area (FEBA) parallel to the line of contact. Surveillance overflights of enemy occupied areas are also employed using visual observation or radar coverage to both sides of the aircraft's line of flight. The major advantages of surveillance missions are their ability to—

a. Cover large expanses of terrain rapidly and continuously, with the minimum expenditure of aircraft and sensor capabilities.

b. Maintain continuous surveillance over the entire area while flying over friendly positions which increases the capability for aircraft to complete successfully the mission and return safely.

c. Observe movement or changes as they take place on the enemy side of the FEBA which will provide the commander with an early warning of possible enemy intentions and identify specific target areas for further observation by either aerial or ground reconnaissance measures.

4-3. Reconnaissance Missions

A reconnaissance mission is characterized by its direction toward one or more specific target areas without the requirement for continuous coverage. A reconnaissance mission may be developed because of specific information indicating that an area possesses intelligence value, or because current or planned operations indicate a specific area is of significant importance and warrants more detailed coverage. Reconnaissance missions may be on a one time basis only, or periodic, but generally they are more restrictive than surveillance missions in their size and scope of coverage. A reconnaissance mission is ordinarily flown by penetrating the enemy airspace; however, some target areas can be adequately covered while flying behind the FEBA. Because of the type target involved, the need for greater detail, and the characteristics of the different sensors employed to procure the intelligence information desired, reconnaissance missions generally are flown at low altitudes. The major advantage of reconnaissance missions is the added detail it provides for comprehensive intelligence study gained by concentrating the aircraft sensor capabilities over specific targets.

4-4. Mission Requests

Aerial surveillance and reconnaissance missions are classified as either preplanned or immediate. The majority of mission requests are preplanned. Immediate mission requests are

usually for reconnaissance type missions and/or increased intensity of surveillance in a specific area as dictated by a situation.

4–5. Preplanned Missions

Anticipated requirements for aerial surveillance or reconnaissance missions to collect needed intelligence information are met by preplanning their scheduling and accomplishment. A preplanned mission is the most efficient and economical type of mission since it allows sufficient time for thorough coordination, planning, briefing, and consolidation of requirements. It also permits proper selection and allocation of aircraft and sensors and eliminates the wasting of capabilities by assuring that all available airborne platforms are programed for specific mission accomplishment. The proper interpretation, integration, and dissemination of the information gathered can also be programed into the total work effort.

4–6. Immediate Missions

Immediate missions are characterized by the urgency of time involved between request for and receipt of information. Unforeseen requirements for intelligence of immediate tactical value triggers the need for immediate missions. A portion of the overall aerial surveillance and reconnaissance effort normally is held on a standby basis to meet such contingencies. The percentage of the total effort reserved to accomplish immediate missions varies with the tactical situation. For the Air Force, the percentage is determined by coordination between the G2 Air and the tactical air control center (TACC). For Army resources, the determination is made as part of the daily air planning conference conducted by the G2 Air. In addition to the use of specifically designated aircraft to accomplish immediate missions, aircraft that are airborne on missions of lesser impact may be diverted and given the immediate mission for accomplishment.

Section II. COLLECTION MEANS

4–7. General

Aerial missions are further classified according to the type of mission and/or sensor used; visual, permanent record imagery, electronic intelligence, and weather. Any or all of these types may be necessary to support an area of operations. Aerial surveillance missions generally are interrelated and of complementary significance in terms of the information produced. Much of the intelligence information gained through aerial surveillance accrues to the benefit of all services, regardless of the purpose or unit for which it was obtained.

4–8. Visual Aerial Surveillance and Reconnaissance

a. General. Visual aerial surveillance and reconnaissance provides a rapid means of collecting intelligence information of the enemy area of activity through observation by aircraft crews. The value of visual aerial surveillance lies in the speed with which information of fleeting targets can be relayed to friendly units capable of attacking those targets. Visual observations may be augmented by the use of photographic equipment and inflight voice recordings to provide a permanent record of the sightings and to increase accuracy and detail. For a detailed discussion on aerial observation techniques and procedures, see FM 1–80. There are four general types of visual aerial surveillance—

(1) *Area search.* An area search normally is conducted for the purpose of covering a general area, monitoring any movement within an area, detecting military activities, or monitoring movement of civilian populations. The limits of the area to be searched are designated in the mission request; however, the aircraft crew must plan the actual flight pattern to be flown to insure complete target coverage and successful mission accomplishment. Search areas will vary in size dependent upon the tactical requirements.

(2) *Specific search.* A specific search normally is conducted to detect military, paramilitary, or significant civilian activity within suspected, probable, or known locations. A specific search usually is employed for point targets and for specific information. A special form of specific search is contact reconnaissance in which an aerial observation mission is under-

taken to locate friendly units that are isolated or cut off from the main force; e.g., a long-range reconnaissance patrol out of contact with higher headquarters.

(3) *Route reconnaissance.* Observation of roads, railroads, waterways, and coastal and international borders may be conducted to determine enemy usage and traffic location. Route reconnaissance may also be conducted to determine the adequacy of roadways, bridges, and other installations for our own use. Usually it is performed on a point-to-point or town-to-town basis over a selected route which may pass through several search areas.

(4) *Artillery adjustment.* The aircraft normally employed for surveillance and reconnaissance missions can be used to conduct indirect fire adjustment missions when the requirements exist and the priority of employment permits. Normally fire adjustment missions for artillery or naval gunfire will result from in-flight reports rendered by the aircrew or from an immediate request of a supported unit.

b. Limitations of Visual Aerial Surveillance. Much information is collected by a trained and experienced observer; however, he is limited by the speed and vibration of the aircraft, visibility conditions, enemy concealment measures, and the distance from which he must observe as a result of the influence that terrain and enemy air defense may have on the surveillance aircraft. Many limitations of visual aerial surveillance may be overcome by using sensory and light intensification devices and binoculars to replace, verify, or supplement visual sightings.

4-9. Types of Permanent Record Imagery

a. General. Permanent record imagery is essential before, during, and after an operation. All commanders require information concerning the strength, location, and disposition of the enemy. Aerial imagery normally can meet this requirement by providing recorded images which are studied, analyzed, and interpreted. Such analysis provides more detail and accuracy than that derived from visual observation. The use of permanent record imagery requires sensory and recording equipment of various degrees of complexity. A limitation of imagery is that the time lag between acquisition, interpretation, and dissemination may reduce or negate the value of information collected on transient and fleeting targets. Permanent record imagery may be obtained through the use of—

(1) Conventional photography.

(2) Infrared sensor devices.

(3) Radar.

b. Conventional Photography. Conventional photography is classified according to the camera position and the area of coverage.

(1) Classification according to camera position is as follows:

(*a*) *Vertical.* Coverage of a target is achieved by photography taken from directly overhead. It provides photography of relatively constant scale and allows the interpreter to get the best stereovision and most accurate measurements.

(*b*) *Oblique.* Coverage of a target area is achieved by photography taken at an angle from the vertical. Oblique photography presents a view of the target while flying toward or parallel to it. Oblique photography closely resembles the normal eye view and allows an interpreter to "see" into an area in a normal fashion instead of seeing the target as it appears from directly overhead. High oblique photography includes a portion of the skyline behind the target area; low oblique photography taken with an 80 percent overlap between frames will allow stereoviewing.

(*c*) *Panoramic photography.* Panoramic photography is taken with a special camera that scans across a wide area of the terrain, usually from horizon to horizon. It provides rapid photographic coverage of large areas of the terrain on both sides of an aircraft's line of flight in only one pass over the target area.

(2) Classification according to area of coverage is as follows:

(*a*) *Pinpoint.* Pinpoint photography is that taken of a single point, feature, individual target, or small area of terrain which can be covered with a very small number of photographs. A minimum of 60 percent overlap between individual photoframes is necessary to assure stereoviewing.

(*b*) *Strip photography.* Strip photography consists of a continuous series of overlap-

ping photos taken in a single flight line which covers a lengthy target or large area of terrain.

(c) *Continuous strip photography.* Continuous strip photography contains an unbroken image throughout the length of the flight line. This type of photography requires a special camera and eliminates individual photoframes with overlap throughout the length of the strip.

(d) *Area photography.* Area photography consists of two or more strips of photography which overlap to the side. Area cover requires a minimum of 30 percent sidelap between strips in addition to the 60 percent overlap between frames in order to provide stereoviewing throughout the area of coverage. The main use of area cover is in planning or for comparison of coverage by inspection with other imagery available. Area cover with the proper overlap and sidelap can be used to make photomosaics. Normally area cover is composed of vertical photography.

(e) *Mapping photography.* Mapping or charting photography is taken for the purpose of preparing or revising maps and charts. Usually it is taken at much smaller scales than intelligence photography and should be used for intelligence purposes only when no other intelligence photography is available. This photography is taken with special stabilized cameras and other equipment, and the flight pattern and operation of the aircraft are carefully controlled.

c. Infrared (IR) Imagery.

(1) An IR system is a passive sensor which detects emitted and reflected thermal radiation coming from the terrain and objects on the terrain. Current IR systems filter out reflected radiation and only record that radiation emitted by the target area and objects. The total emitted radiation is a function of an object's temperature and its emissivity. Emitted radiation will differ between objects and the resultant differences will be sensed and recorded by the IR system. The IR sensor can detect minute differences and, therefore, differentiate between objects close to each other. To achieve the maximum capability, the IR system must operate at low altitudes and its scan coverage is limited to the area directly below the flight path of the aircraft; therefore, it is used normally only for point, linear, or small area targets.

(2) IR aircraft are equipped for both a real time pictorial display of the IR returns as the aircraft is passing over the terrain and the recording of the sensor acquired information on strips of film for later development and interpretation. Army IR aircraft can also transmit their imagery to a ground sensor terminal (GST), thereby providing a real-time presentation of the target area to personnel on the ground. The GST also records these presentations on film; however, both the film from the aircraft and the film from the GST must be processed by an imagery processing facility before they become permanent record imagery and can be interpreted by trained image interpreters. (Use of the nomenclature "ground sensor terminals" (GST) throughout this manual refers to new equipment now coming into the Army inventory to replace the current data terminal teams (DTT).)

d. Side Looking Airborne Radar (SLAR).

(1) SLAR is an active electronic device which emits energy and senses that portion of the emitted energy which is returned by reflection off the terrain and objects thereon. The radar's energy may be directed at terrain to the left, right, or both sides simultaneously along the flight path of the aircraft. The energy that is reflected from objects on the ground, both fixed and moving, are recorded on strips of film. It should be noted that since the radar pulse is line-of-sight, any high ground or tall objects in the path of the radar pulse will block out radar returns from any smaller objects which they mask. This caused SLAR returns to leave blank spots, called radar shadow, or non-sensed areas, wherever these hidden areas occur.

(2) The SLAR produces two images simultaneously: one depicts fixed target information (FTI), such as terrain features and buildings, and the other depicts moving target information (MTI); however, in order for the SLAR to acquire MTI, movement of the object must be greater than 3 MPH. These two strips of film when developed are called SLAR imagery. Army SLAR aircraft are equipped to con-

tinuously process exposed film and provide the airborne sensor operator a pictorial display of the returns while the aircraft is still in flight. Time delay from the time of film exposure until it is developed and ready for viewing is approximately two minutes. Army SLAR aircraft like the Army IR aircraft have a capability for transmission of imagery data to ground sensor terminals. At the GST these sensings are recorded on film, developed, and ready for viewing by image interpreters in approximately two minutes.

4–10. Weather Reconnaissance

Weather reconnaissance is conducted to obtain weather data over areas where weather reports are not available. The two basic methods of accomplishing weather reconnaissance are by taking instrumented atmospheric measurements and by making visual observations. Normally weather reconnaissance is performed by Air Force weather reconnaissance elements; however, Army aircraft can perform limited visual weather observation for the command. Weather reconnaissance is accomplished to obtain—

a. Weather data for use in preparing weather analyses and forecasts. Missions which obtain such data fall into two general classes. Scheduled missions make weather observations, to include atmospheric surroundings, at predetermined locations and at scheduled times. Unscheduled missions investigate doubtful weather conditions which will affect the battle area.

b. Special reports of weather conditions along the routes to, and in the vicinity of, targets for proposed air operations. These reports are required to permit immedicate operational decisions such as diversion of aircraft, changes of flight tracks, or cancellations of missions.

c. Special reports of weather conditions that might have a significant influence on enemy capabilities.

4–11. Categories of Permanent Record Imagery

The three categories of permanent record imagery commonly used by the imagery interpretor are initial record, general intelligence record, and detailed intelligence record. The availability of improved imagery interpretation equipment in the tactical imagery interpretation facility (TIIF) has allowed the usable scales of photography to be increased in each category as indicated in *a* through *c* below.

a. Initial Record. Initial record is complete, permanent imagery coverage—usually flown seasonally—of a projected or actual area of operations generally extending from the line of contact with enemy ground forces to deep within the enemy territory. Photographic coverage normally will be of small scale (1:20,000 to 1:60,000) and suitable for stereoscopic study. Initial record provides basic information about enemy installations and defenses, cultural features, trafficability, soil, and vegetation. Its principal purpose is to provide a basis for evaluating changes in enemy-occupied territory. Areas subject to seasonal changes are recorded under conditions characteristic of each season to eliminate the observed differences caused by seasonal variations. Vertical initial record may serve as a map substitute or supplement. The field army normally supervises the automatic initial distribution to subordinate units according to areas of interest; supplementary issues are made as necessary. Typical allowances are shown in FM 101–10.

b. General Intelligence Record. This is vertical medium scale (1:10,000 to 1:20,000) imagery coverage within the field army area of interest. It provides current intelligence information and is compared with initial record imagery to determine current location and disposition of enemy installations, troop concentrations, troop movements, equipment, and supplies. Normally this type of imagery is requested by division and higher headquarters.

c. Detailed Intelligence Record. In order to supplement the general intelligence record by providing large scale imagery areas of specific interest, detailed intelligence record is obtained. It provides the imagery for detailed analysis of specific enemy activity, selected terrain features, installations, or equipment. It is frequently necessary to use more than one sensing or recording system over the target. Shown in (1) through (4), below, are types of detailed analyses.

(1) *Vertical analysis.* The study of large scale (1:10,000 and larger) photography reveals the plans and heights of installations not shown in general intelligence record.

(2) *Oblique analysis.* The study of air photographs taken at an angle from the vertical will reveal installations from the elevation viewpoint. This type of imagery is particularly important in the analysis of features not suitable for vertical analysis such as concealed or well-camouflaged installations.

(3) *Concealment analysis.* Installations and equipment hidden from observation may be detected and subjected to study by special recording techniques; e.g., a camouflage net located through general intelligence record imagery may be identified as a covering for mechanical equipment when the area is subjected to infrared search.

(4) *Deception analysis.* Enemy measures designed to deceive and confuse friendly intelligence collection agencies may be detected through analysis and comparison of photographic and electronic presentations such as radar, infrared, and electronic intelligence collected at or near the same time.

CHAPTER 5

AERIAL SURVEILLANCE AND RECONNAISSANCE PLANNING OPERATIONS AND COORDINATION

STANAG 2102, 3277 SEASTAG 3277

Section I. GENERAL PLANNING

5-1. General

Aerial surveillance and reconnaissance is conducted to provide assistance to the commander in the accomplishment of the unit mission. In preparing his aerial surveillance and reconnaissance plan, the G2 Air must consider all requests received from subordinate units as well as those requests generated by his own headquarters. He must integrate those requests from subordinate units which he approves with his own requirements to produce the total aerial surveillance and reconnaissance plan for the commander.

5-2. Planning Principles

Principles considered in planning are—

a. Essential Elements of Information (EEI). Generally, the EEI will serve to indicate the aerial surveillance to be planned for and requested. The G2 Air develops the plan for the command and establishes priorities based on the EEI and other guidance furnished by the G2. He insures that the plan will yield the information required to support tactical planning.

b. Economy of Effort. Economy of effort is the planned use of equipment to obtain a maximum return from available resources. It is attained through the consolidation and integration of requests and tasks, the denial of requests which would duplicate information currently available, and the allocation of the available effort in relation to the requirements and priorities established.

c. Flexibility. Maximum flexibility is gained by the selection of alternate objectives and/or sensor means. This is especially true during periods of marginal visibility; e.g., during a photographic mission unexpected cloud cover may occur over the primary area of interest. The aircraft may be diverted either to a secondary target or an alternate sensor may be used which can acquire some useful imagery when the preselected sensor would have been nonproductive.

d. Priorities. All aerial surveillance requests are assigned a priority. The basis for determination of priorities is the urgency and importance of the requested information to support the operations of the requester. This is influenced by the unit mission, tactical situation, and the purpose for which the surveillance is intended. Normally, only a Roman numeral is used to indicate to the higher G2 Air the priority based on the importance of the requirement to the unit submitting the request; however, these priorities may change at higher echelons when considered in the overall tactical situation. Priorities, with their identifying Roman numeral are—

(1) *Priority I.* Surveillance of enemy units or activities, to include nuclear delivery means, that could prevent, or is preventing, the accomplishment of the friendly force mission.

(2) *Priority II.* Surveillance of enemy units or activities capable of immediate serious interference with the friendly force mission; and the surveillance required in the conduct of current tactical operations.

(3) *Priority III.* Surveillance of enemy units or activities capable of ultimate serious interference with the mission; and the surveillance required to support planned future operations.

Tocticol Action	Situation ond Generol Considerations	Areo Reconnoissonce Emphosis	Specific Information Sought
Withdrowol	1. G2 Air can expect: o. Enemy oir superiority. b. Limited TAF support. c. Fast moving fluid situotion. d. Possible non-ovoilobility of initiol recard ond generol intelligence record imogery. 2. The G2 Air should plan to: o. Use orgonic oircroft for primory support. b. Use immediote missians to meet the requirements developed by tha fluid situotian. c. Use visual air reconnoissance to meet tha requirements far timely reporting of informotion. 3. If friendly oir superiority is obtoined, G2 Air should: o. Plan full use af available TAF visual recannaissance. b. Coordinate with G3 Air for use of ormed oeriol reconnoissonce.	1. Areos in which enemy is opplying or hos copobility af opplying most pressure. 2. Areos most likely to be occupied by enemy as indicoted by knowledge of his toctics, deployment ond reserves.	1. Enemy ovenues of opprooch. 2. Troop movement (type ond sixe). 3. Displocement of weopons. 4. Movement of reserve units. 5. Locotion ond conditian of obstocles including choke points. 6. Location of commond posts, supply ond evocuotion estoblishments.
Defense	1. Since defense is normolly a prelude to the offense, G2 Air must: o. Detect enemy buildup for defense or ottock. b. Assist in plonning for friendly ottock. 2. The G2 Air ot corps ond divisian shauld determine enemy buildup by: o. Employing orgonic aviotion to keep enemy under surveillonce. b. Employing non-orgonic oerial reconnaissonce to extend depth of caveroge. 3. The G2 Air should ossist in planning for friendly ottock by: o. Continuing surveillance alang entire front, concentroting olong planned axis of advance. b. Determining areas to be recannaitared.	Even distributian af reconnaissance across entire front with emphosis on: o. Areos of greoter enemy octivity. b. Areas in which friendly octivity is contemploted.	1. Detection of enamy buildup. o. Location ond astimoted strength af enemy units alang FEBA. b. Locotion, type and astimoted strength af enemy reserve. c. Location enemy supparting weopons. d. Locatian enemy abservatian pasts. e. Locotion enemy avenues of opprooch. f. Locotian cammond posts and supply points. g. Locotian enemy armar. h. Enemy troop movement. i. Locotion of obstocles. 2. Preparotian for ottock. a. Cantinuous study af camparativa cover vs initiol record imogery. b. Special imagery caver and studies: (1) Trafficability. (2) Enemy strong points. (3) Canditian af roilways ond morshalling yords. (4) Conditian of enemy oirstrips to determine feosibility of friendly use. (5) Friendly avenues af appraach. c. Continuous location af enemy reserves with amphasis an armor.
Attack	The G2 Air can expect a fluid situotian in which moximum support by oir reconnoissonce af the TAF is ovoilable. The G2 Air shauld: o. Use direct abservotion to meet requirements for timely exploitation and reporting of information. b. Adjust depth and sixe af area to be recannaitered based on rate af advance. c. Make maximum use of night visuol, photogrophic ond electronic surveillance.	1. Concentrated in frant of main attack. 2. Areos accupied by enemy reserve forces (especiolly armor).	1. Mavement enemy units (to and from FEBA). o. Actuol movement (type, size, direction). b. Locatian af vocoted areas. c. Locotian newly accupied areas. 2. Movemant enemy reserve. 3. Displacament anemy supparting weapons (type, number and directian af mavement). 4. Enemy resupply activities. 5. Locatian and canditian af obstacles.

Figure 5–1. Planning factors for aerial surveillance and reconnaissance.

(4) *Priority IV.* Surveillance of enemy units or activities capable of limited interference with the mission; and the surveillance required for administrative and logistical purposes.

e. Cover and Deception. The implementation of cover and deception measures must be considered when scheduled aerial surveillance missions over the combat area could compromise the operation by indicating unusual interest in that area. The G2 Air must expect to divert a part of the surveillance capability to implement cover and deception activities. Some cover and deception measures available are—

(1) Reducing the number of missions over the area of interest.

(2) Simulating interest elsewhere.

(3) Controlling flight lines within the area of interest to obtain a random appearance.

(4) Integrating reconnaissance missions with offensive missions.

5–3. Planning Factors

The major factors considered in planning in view of their effect upon the tactical situation and upon aerial surveillance missions are—

a. Friendly and Enemy Situation. The G2 Air considers the type and extent of planned operations in developing aerial surveillance plans (fig. 5–1).

b. Capabilities. The G2 Air considers the favorable and limiting characteristics of the sensors and platforms available, and the capabilities of the reproduction, interpretation, and dissemination agencies and their facilities.

c. Terrain. A study of the terrain is made in terms of environmental impact to the acquisition of usable imagery for the satisfaction of EEI requirements. The G2 Air uses this information to plan missions and select appropriate sensor(s). Care is exercised to eliminate preconceived or fixed ideas regarding the enemy's use of terrain and associated counterreconnaissance measures. Maps, charts, and data concerning tidal areas, channels, and rivers must be kept current for use in the imagery exploitation processes. Seasonal tidal fluctuations have a direct impact on tactical operations.

d. Weather. Aerial surveillance plans are based upon predicted weather to exploit the proper sensor in the environment best suited to its operating characteristics. Planning is flexible to allow for variations between predicted and actual weather conditions.

5–4. Planning Phases

Aerial surveillance and reconnaissance planning is divided into two phases—long-range planning and day-to-day planning. The preponderance of effort in long-range planning is accomplished at field army level while the major effort at subordinate levels is in day-to-day planning.

5–5. Planning Sequence

a. The general sequence of planning is essentially the same for both the long-range and day-to-day phases of planning. The broad steps in the preparation of the plan by the G2 Air are accomplished in the following sequence:

(1) Determination of the aerial surveillance and reconnaissance requirements.

(2) Assignment of priorities to each requirement.

(3) Satisfaction of the requirements with the surveillance capabilities available.

b. General considerations of the G2 Air are as follows:

(1) The unit mission as amplified by—

(*a*) Commander's concept.

(*b*) Unit's operational plans.

(*c*) EEI.

(*d*) Intelligence annexes.

(2) Surveillance coverage of the entire zone of responsibility.

(*a*) Preparation of the aerial surveillance and reconnaissance plan.

(*b*) Integration of the aerial plan with ground reconnaissance and observation plans.

(3) Coordination with higher, adjacent, and subordinate units.

(4) Selection of areas for continuing priority emphasis.

(5) Continuous planning.

Section II. SPECIFIC PLANNING

5–6. Long-Range Planning

a. Long-range aerial surveillance planning, prior to tactical engagement or the conduct of operations, begins with the receipt of a directive from higher headquarters or the decision of the local commander. The planning establishes those requirements which must be satisfied to obtain the information essential to the commander. Planning is accomplished in the greatest amount of detail possible within the time available to the echelon at which the planning is done and the capabilities of the supporting forces.

b. In those cases where the opposing forces have not yet engaged in combat, as in a landing by amphibious forces, the G2 Air bears an especially heavy portion of the responsibility for obtaining intelligence information. Little or no intelligence data will come from subordinate units before contact with the enemy, because there will be no prisoners of war, patrols, observation posts, deserters, or line crossers to provide it. It is during this phase of operations that aerial surveillance and reconnaissance becomes the prime and/or sole source of information acquisition.

c. The first step which the G2 Air takes is to develop a planning program for his branch. He does this in a manner similar to the procedures outlined in FM 30–5.

d. The G2 Air develops the reconnaissance and surveillance missions necessary to acquire the raw data. He coordinates with the supporting tactical air elements of other U.S. or allied services designated to operate with the Army. In addition, when organic aviation elements can accomplish aerial surveillance, he plans for, coordinates, and integrates the aerial surveillance and reconnaissance missions of these elements into his plan.

e. The processing of the incoming imagery and visual observation reports into a usable form is the next step in the G2 Air effort. This necessitates having trained image interpreters properly briefed on the operation and directing them in the production of intelligence.

f. The next step in the G2 Air's plan is to prepare his output in formats most useful to the troops, agencies, and staffs who will become involved in executing the planned operation. Special maps and defense overprints, annotated imagery, terrain and defense analyses, and up-to-date tactical maps are examples of the results of well-planned and thoroughly coordinated G2 Air operations in the planning phase.

g. The final step in the G2 Air's work is timely dissemination. The dissemination tasks must be coordinated via SOP and instructions to minimize bottlenecks and attain maximum timeliness.

5–7. Day-to-Day Planning and Operations

a. General. The same procedures discussed in paragraph 5–6 are used in day-to-day planning and operations. The commander's EEI and other intelligence requirements (OIR) developed by the G2 provide the G2 Air with the current priority tasks which must be accomplished. To provide for the orderly scheduling and accomplishment of these requirements, the G2 Air should utilize a collection plan (app C). The EEI and OIR are listed on the plan and the indicators are developed for each task. From the listed indicators, the broad requirements are developed as the basis for the aerial surveillance and reconnaissance plan, and the specific requirements for all collection agencies are developed. Because of the time lag in the aerial surveillance cycle, specific requests should be prepared as far in advance as possible.

b. Specific Planning Considerations of the G2 Air.

(1) Process and consolidate all requests.

(2) Review available imagery (posted recent master cover traces) for adequacy to fulfill requirements before requesting new or additional imagery.

(3) Review specific intelligence requirements of the requests for analysis and consolidation relative to: priorities, target locations, times over targets, categories (surveillance, reconnaissance, visual/photo, IR, SLAR) times desired information no longer of value, and initiation or formulation of sortie (mission) requirements to satisfy the EEI.

(4) Determine enemy and friendly situations regarding the following:

(*a*) Review known or suspected enemy countermeasures; air to air and ground to air defensive activities and capabilities and determine their impact to the acquisition process as well as aircraft survivability.

(*b*) Address known or suspected enemy ground unit dispositions, operations and/or maneuvers in progress and their impact on acquisition process and the satisfaction of the EEI (mission requirements).

(*c*) Address compatibility of planned missions with friendly scheme of maneuver relative to established and assigned priorities to timely fulfillment of information needs. Also, begin formulation of coordination to be effected.

(5) Determine the impact of terrain to surveillance and reconnaissance sorties in terms of:

(*a*) Environmental accommodation afforded to enemy activity/target area that will delimit or enhance sensors' capabilities.

(*b*) Terrain effects on missions (aircraft/sensors) such as:

1. Obstacles to low altitude acquisition (terrain avoidance),

2. The acquisition of needed target area coverage vs. required sensor-target attitudes (vertical vs. standoff), and

3. Terrain obstacle impact on needed coverage (such as radar shadow).

(6) Review current and predicted weather for area of operations and specifics for critical target areas to determine:

(*a*) Impact on sensor capabilities vs. satisfaction of EEI (mission) requirements.

(*b*) Derivative target and environmental changes, natural and man induced, which will enhance or obscure detection.

(7) Determine available operational sensor systems with subsequent processes as follows:

(*a*) Apply sensors' capabilities vs. the target, environmental and weather factors and prediction of degrees of satisfaction of specific mission (EEI) requirements.

(*b*) Select sensors for exploitation for each mission and list accordingly as primary and secondary sensors, (i.e., best, next best). Coupled with this selection is the planning for commitment of ground sensor terminals as appropriate or dictated by those priority missions requiring near real-time readout to fulfill stated requirements.

(8) Assess available operational aircraft/sensors for the daily 24-hour time frame by category, IR and SLAR, and day and night. Planning assignments of available aircraft/sensor system sorties for fulfillment of requirements. Assignment of tasks (missions) are made accordingly.

(9) Determine each request's desired time ever target (TOT) coupled with average processing, readout, and dissemination times vs. the latest acceptable time of readout addressed concurrently with priorities. Urgency of requirements may dictate employment of ground sensor terminals as appropriate for priority IR and SLAR missions.

(10) Coordinate with ground and air operational and intelligence elements to obtain mutual support where possible.

(11) Insure that all requirements levied on the G2 Air are provided or accounted for in planning.

(12) Insure that plans are commensurate with the capabilities of available aircraft, sensory equipment, observers, ground sensor terminal teams, reproduction facilities, image interpreters, and dissemination resources.

(13) Review air request forms for accuracy, completeness, and elimination of duplication of effort before transmitting to the supporting or tasked aviation elements.

(14) Prepare final aerial surveillance and reconnaissance plans including assignment of tasks to subordinate units.

(15) Insure that communications security (COMSEC) considerations have been included in the aerial surveillance and reconnaissance plans.

(16) Continue planning for daily operations.

Section III. REQUEST PROCEDURES

5–8. Preplanned Requests

a. The initiation, receipt, processing, and implementation of preplanned requests are basically the same at all levels. They are developed through prior planning and careful consideration and deliberation at all echelons before being submitted to the next higher headquarters. They represent the total known needs of the command as of the time of their submission.

b. At each level, when a request is received it is entered in an aerial surveillance log, a type format for which is shown in figure 5–2. The G2 Air duty team chief integrates all approved requests received into his own plan, prepares a draft of the overall plan for the command, and submits it to the G2 Air for approval. In formulating the plan, organic Army aircraft are considered for all missions which fall within their capabilities. Consideration is also given to the capabilities of aircraft from supporting artillery and combat support elements when they are able to furnish a portion of the visual surveillance requirements of the combat zone. Missions which cannot be accomplished by organic means will be tentatively identified for accomplishment by the Air Force. Below field army level, the approved plan is submitted to the next higher headquarters for consideration and inclusion into its plan.

c. At field army level the plans from lower echelons are integrated by the G2 Air into the field army's plan to form the total field army plan. This is submitted to the G2 for approval. After approval, the plan is coordinated for execution. When available, missions within organic aircraft capabilities are assigned to Army units for accomplishment. All other missions are coordinated by the G2 Air or his representative with the TACC at a daily planning conference. Requests are scheduled according to their priority against the total number of Air Force sorties allocated to support the field army, minus the number of sorties which the G2 Air indicates will be suballocated to subordinate corps to support their immediate operational needs. After agreement between the G2 Air and TACC has been reached, subordinate corps are notified of the final plan and the immediate sorties are allocated.

d. Mission numbers, call signs, and other data for approved Air Force flown missions are received from the TACC and for approved army missions from the Army flying unit, and the information is posted on the mission status board. A type mission status board is at figure 5–3. Pertinent information on all missions is disseminated to the requester. The MIBARS is also kept informed on all Air Force missions.

e. During daily operations, changes in the preplanned missions may be required due to changes in unit mission, or shifts in priority, enemy situation, weather, or aircraft availability. The G2 Air or his representative coordinates, on a continuous basis with the TACC on necessary adjustments in Air Force preplanned missions and with the organic Army flying units, if provided to the command, on adjustments in Army preplanned missions.

5–9. Immediate Requests

a. Immediate requests that originate at field army are submitted directly to the G2 Air duty team in the FATOC. The request is processed in a manner similar to a preplanned request. The duty team chief will—

(1) Analyze the requirement against the current and programed missions.

(2) Determine if requested information is currently available, duplicates another mission, can be accomplished by organic Army means at a lower echelon, or must be accomplished by Air Force means.

(3) Review preplanned missions to see if a mission already airborne could assume the immediate requirement.

(4) Determine if information required can be obtained in time to be of value.

(5) Establish the mission priority.

(6) If disapproving the request, immediately notify the requester of the reason for disapproval.

(7) If approved, pass the request to a subordinate G2 Air for accomplishment by Army means, or to the TACC for accomplishment by Air Force means.

PERIOD _____

	VISUAL/PHOTO																														
	DAY						NIGHT						INFRARED				RADAR														
AVAILABLE																															
PREPLANNED																															
IMMEDIATE																															

LOG NO	UNIT REQUEST			ARMY NO		PRIORITY	TIME NO LONGER OF VALUE	REQUIRED	ALLOCATED	BALANCE	REQUIRED	ALLOCATED	BALANCE	REQUIRED	ALLOCATED	BALANCE	REQUIRED	ALLOCATED	BALANCE	TOT		MISSION #	DISAPROVED	FWD TO		ABORT	DIVERTED	COMPLETED	DISSEMINATED	REMARKS
	TYPE	MONTH	REQ NO	PREPLANNED	IMMEDIATE															REQUESTED	ASSIGNED			HIGHER HQ	AVN O					

Figure 5–2. Type aerial surveillance log.

MISSION NUMBER	ARMY/ AF	NR OF ACFT	COMMUNICATIONS		OPERATIONAL TIME			TYPE MISSION	TARGET AREA, ROUTE, POINT, OTHER	REMARKS
			CALL SIGN	FREQUENCY	TAKE OFF	TOT	LAND			
10 TRS 121	AF	1	SNOOPER 1		0005	0110	0235	IR	R 1–6	COMPLETED:
10 TRS 122	AF	2	SNOOPER 4		0555	0630	0715	V/P	R 3–5	ABORTED WX AT TGT
10 TRS 126	AF	1	BLUE JAY 5		0620	0700		V/P	A 8	IN AIR
45 – 1 – 7	A	1	HAMMER 4	27.8/26.4	0610	0630	0700	V/P	R 6–Ⱬ50–R3	COMPLETED
45 – 2 – 7	A	1	HAMMER 11	27.8/26.4	0645	0645	0730	IR	A3(SOUTH ½ B3)	FOG FCST IN AREA
45 – 3 – 7	A	2	HAMMER 3	27.8/26.4	1200	1300		SLAR	DIV FRONT	

Figure 5–8. Type mission status board.

(8) Provide the MIBARS with data and special instructions on approved Air Force missions.

(9) Post the mission on the mission status board.

(10) Notify the requester of the scheduled aircraft time over target, the radio call sign, and the frequency assigned to the aircraft.

b. Immediate requests originating at corps are submitted directly to the corps G2 Air or his representative in the corps TOC. The immediate requests are processed in the same manner as those that originate in field army with the following exceptions:

(1) Approved requests not within Army aviation capabilities are submitted directly to the DASC at corps level rather than to the TACC.

(2) Information required to properly brief the flying crew and assist in the interpretation and dissemination of the resultant intelligence information collected is furnished directly to the organic Army aviation unit, or to the MIBARS detachment, and to the ARLO collocated with the TAF reconnaissance squadron which has been scheduled to perform the mission.

(3) The field army G2 Air will be notified of approved requests and of that information that was furnished directly to the MIBARS detachment.

c. Immediate requests from echelons below corps (fig. 6–1).

(1) Maneuver battalions, brigades, division, or separate units that have a direct support TACP with their headquarters submit immediate requests directly to their direct support TACP. Units that do not have a TACP submit immediate requests through command channels to that first higher headquarters with a TACP. At the TACP, the request is transmitted over the Air Force air request net directly to the DASC at corps. All intermediate TACP between the requester and the DASC monitor the request and notify the S2/G2 Air. If the intermediate S2/G2 Air does not object to the request, he has his TACP signify approval by remaining silent on the net. If, however, the S2/G2 Air disapproves the request, he passes his disapproval to both the corps G2 Air and the originator of the request over the TACP communication facilities. In arriving at a decision to approve or disapprove the request, each S2/G2 Air, from maneuver battalion to corps, evaluates the request to see that it is valid; if it can or cannot be met from intelligence information already at hand; if it can or cannot be accomplished by Army means; or if it is or is not part of a surveillance and reconnaissance mission already in progress.

(2) At the DASC, the Air Force reconnaissance officer will coordinate the request with the corps G2 Air. If the G2 Air disapproves the request, the DASC will notify the requester of the disapproval through the TACP. If the G2 Air approves the request, the DASC will then direct one of the TAF reconnaissance squadrons to accomplish the mission. Once approved by the G2 Air, the request and the mission flight information are furnished to the appropriate MIBARS detachment and ARLO and the field army G2 Air as discussed in *b* above.

5–10. Requests for Other Type Missions

a. Artillery Adjustment. Requests for adjustment of artillery fire that cannot be accomplished by Army aircraft are processed like other aerial surveillance requests. Requests are coordinated with the G3 Air at all levels prior to submission to higher headquarters in order to use, if feasible, Air Force close support aircraft already operating in the area or to control the adjustment of fire using an artillery forward observer in coordination with an Air Force forward air controller.

b. Electronic Reconnaissance. Whenever the supporting USASA unit determines that electronic reconnaissance is necessary in order to provide the EEI, but that the requirement must be filled by USASA resources other than the unit's own; the USASA unit will send the request through USASA channels. All such requests will be closely coordinated with G2 Air at each level of command. When the supporting USASA unit determines that U.S. Air Force electronic reconnaissance is required, the request will be processed through the EW/Cryptologic officer in the SSE for forwarding in the same manner as other Aerial Surveillance requests; however, these requests

are closely coordinated with the USASA element at each level of command in order to accomplish the mission at the lowest possible level. When a request for USAF electronic reconnaissance is made, it is coordinated by the G2 Air at field army with the TACC for accomplishment with Air Force electronic reconnaissance resources.

c. Weather Reconnaissance. Requests for weather reconnaissance missions are processed in the same manner as other aerial surveillance requests.

Section IV. AIRCRAFT AND SENSOR CAPABILITIES

5-11. Platforms

a. Army aircraft are designed to perform visual aerial surveillance, aerial photo reconnaissance, infrared reconnaissance, radar surveillance, and electronic reconnaissance. The advantages of organic aircraft are in their quicker responsiveness to the commander's needs, their slower flying speeds, their ability to fly at very low altitudes which enhances visual observation, and their ability to operate from short, semi-improved runways or areas close to the supported forces. The disadvantages of organic aircraft are vulnerability to ground fire, short operational range, and slow speed.

b. Air Force aircraft are designed to perform the same type of missions as Army aircraft with the addition of special radar mapping and weather reconnaissance operations. The advantages of Air Force aircraft are in their ability to photograph large areas, their greater variety of camera systems that can be carried by a single aircraft, their high speed, their long operational ranges which allow deep penetration and rapid return, and their lower criticality to loss by ground fire since they can operate at extremely high altitudes. Their disadvantages are that they operate at speeds too high for detailed visual observation and that they need to operate from improved landing fields.

5-12. Sensors

All sensors operate according to specific natural laws regarding a particular portion of the electromagnetic spectrum. Each portion of the spectrum provides a different and unique capability as effected by natural phenomena. Visible light photography has the highest object resolution but is hampered during periods of reduced visibility such as rain, heavy clouds, and darkness. Infrared imagery is next in object resolution; however, emitted IR energy is rapidly reduced by the heat absorbing characteristics of rain, snow, fog, clouds, and hail. Radar can operate at reduced capability through clouds and precipitation and other conditions of poor visibility and provides the best resolution. SLAR is limited to gross target information and detection of moving objects. The capabilities of sensors become an important consideration in their selection (fig. 5-4). Each sensor is complementary to the others; i.e., optical imagery may find the object, radar may indicate its movement, and infrared may detect its heat emissions.

a. Photographic Imagery. Two major factors must be considered in planning photographic imagery missions; the desired scale of the imagery and the maximum utilization of the photographic missions.

(1) Suggested minimum scales for detailed photo imagery interpretation have been extracted from TM 30-245 and are contained in appendix E. Factors influencing the choice of scale may include the type of information desired, cloud cover, light conditions, the type of platform, camera, lens, film used, and the air defense capabilities of the enemy.

(2) Many requests for photographic imagery will be of small areas or pinpoint targets. In order to use the effort most economically, photographic requests are consolidated whenever possible. A mission is planned so that processing, reproduction, interpretation, and dissemination can be accomplished within the time required. Careful selection of the route to and from the primary target may allow inclusion of other surveillance requirements to be accomplished during a single mission.

b. Airborne Radar. Flight planning for the use of radar sensors considers the characteristics of radar waves. Radar waves of current

	DAY						NIGHT					
	CLEAR	MOISTURE			DUST		CLEAR	MOISTURE			DUST	
		Haze	Cloud	Rain	Haze	Concentrated		Haze	Cloud	Rain	Haze	Concentrated
VISUAL	E	S-U	U	S-U	S-U	U	V (Artificial light augment ar light search)	S-U	U	S-U	S-U	U
PHOTOGRAPHY:												
FILM Panchramatic	E	V	U	V	V	U	E-S (Flash ar Flare)	U	U	U	U	U
FILM Camauflage Detectian	E	V	U	V	V	U	U	U	U	U	U	U
FILM Calar	E	V	U	V	V	U	U	U	U	U	U	U
FILM High Speed	NA	NA	NA	NA	NA	NA	E-U (limited by ambient light)	U	U	U	U	U
HIGH RESOLUTION RADAR	E	S	S	V	S	U	E	S	S	V	S	U
SLAR/MOVING TARGET INDICATOR	S	S	S	V	S	U	S	S	S	V	S	U
INFRARED	S	S	S	V	P	U	E	S	P	V	P	U

Anticipated Results: E - Excellent
S - Satisfactary
P - Marginal Use
V - Variable (Effectiveness dependent upon density af haze ar rain)
U - Unusable
NA - Nat Applicable

Figure 5–4. Sensor selection guide.

sets do not penetrate heavy foliage or intervening terrain; therefore, the flight lines are planned to provide full coverage. Also, radar will not record targets moving exactly parallel to the aircraft's line of flight; therefore, flight lines should be flown to avoid having major traffic arteries such as highways, waterways, and railroads within an area under surveillance run perpendicular to the line of flight. Airborne radar, principally SLAR, produces general intelligence record imagery with the primary emphasis on indications of moving vehicles. A primary advantage of SLAR is that imagery can be obtained without having to penetrate into enemy territory. The airborne radar system has a day/night, near all weather capability which can be employed during periods of low visibility when visual, photographic, or infrared surveillance/reconnaissance measures are curtailed. Only conditions of extreme weather and turbulence will adversely affect the radar results. Since radar is an active sensor, its energy output can be detected by the enemy; electronic countermeasures (ECM) can be employed to jam the signal or degrade the radar returns.

c. Infrared. Airborne infrared detectors produce detailed or general intelligence record imagery by sensing radiated temperature variations between the terrain and objects of the terrain. By varying the type of detector used in the set, either an infrared image of the area being covered or a presentation of points of significant temperature variations may be obtained. This type of sensor is passive in that it does not depend upon detecting the reflection of transmitted energy as does radar. Infrared imagery, like radar may be used for comparison or it may be used to locate areas of activity determined by the number and type of heat-producing objects detected. Rain, snow, hail, smoke, dust, and fog will reduce the sensor's ability to detect heat/IR emissions. The IR aircraft must overfly the target area to obtain its imagery.

Section V. OPERATIONAL AIDS

5–13. General

The techniques used in planning and controlling aerial surveillance and reconnaissance require the development of operational aids. These vary in scope and complexity depending upon the requirements of the preparing echelons. A complete listing of operational aids except for the G2 Air collection plan and aerial surveillance log which have been covered in paragraphs 5–7 and 5–8 is shown in figure 5–5 and discussed below.

5–14. Section SOP

The section SOP establishes necessary administrative procedures to insure the proper functioning of the G2 Air section. It includes the organization, responsibilities, and duties of personnel.

5–15. Aerial Surveillance Annex to the Unit Intelligence SOP

The aerial surveillance annex to the unit intelligence SOP establishes the administrative procedures for the command's G2 Air system. It is initially prepared at field army. Corps, division, and lower units prepare their SOP in consonance with the guidance furnished by the next higher echelon. There is no prescribed format for this annex.

5–16. G2 Air Situation Map

The G2 Air situation map covers the command area of interest. It is similar in scope to the G2 situation map and is kept current by plotting key observations significant to current G2 Air operations. It is a major planning aid used in processing specific requirements of subordinate commands. Requests, plotted on an overlay, are used to evaluate and integrate the specific requirements by consolidating request, where feasible, and by eliminating duplicated requirements. The G2 Air situation map is used as a guide to determine the advisability and feasibility of approving immediate missions.

5–17. Aerial Surveillance and Reconnaissance Appendix to Intelligence Annex of Unit Operation Order

The surveillance and reconnaissance appendix to the intelligence annex of the operation order is used to disseminate orders to subordinate commands. Orders are either general or specific, dependent upon time and availability of information for planning, and are prepared in either written or overlay from (app. D).

5–18. Daily Aerial Surveillance Plan

The daily aerial surveillance plan is a listing with overlay of approved preplanned missions. It serves as a statement of requirements for information and the means selected to satisfy them. The plan is disseminated to subordinate units to provide them with information on the time, type, frequency, and purpose of missions.

5–19. Aerial Surveillance Route, Area, and Point Overlays

a. General. Aerial surveillance route, area, and point overlays are prepared and used to rapidly designate preselected routes, areas, and points in aerial surveillance planning and operations. This system is applicable at all echelons.

b. Concept. The aerial surveillance and reconnaissance appendix to the intelligence annex of an operation order is supported by appropriate route, area, and point overlays which are identified as TABS A, B, and C respectively. Route (TAB A) and area (TAB B) overlays are always prepared in planning for aerial surveillance. A point overlay (TAB C) is prepared when necessary for locating points of primary interest.

c. Responsibility. The G2 is responsible for the preparation of route, area, and point overlays. These overlays are coordinated with the TACC and incorporated into the aerial surveillance appendix. The actual coordination, preparation, and dissemination of the overlays are functions of the G2 Air.

d. Route Overlays. In the preparation of route overlays, selected primary lateral and axial (pertaining to the axis of advance) routes which have been determined to be of greatest tactical significance to the commander are drawn. Selected routes are identified by the letter R prefix (R–1 to R–50) for the numerical designation of axial routes and a block of numbers with a Z prefix (Z–51 to Z–100) designates lateral routes (figs. 5–6 and 5–8). A selected route may not traverse the entire length or width of the area and, therefore, is terminated unless it can be tied to another route within 16 km (fig. 5–6 shows route R–1 terminated because of this distance factor). Termination of an R-route, for example, can be avoided by traveling a Z-route for less than 16 km (fig. 5–7, point Y). When preparing route overlays, road nets, rail nets, waterway systems, and prominent trails, other features are selected that are recognizable from the air. When route planning is not adaptable to the particular terrain (jungle, arctic, etc.), reliance must be placed solely on search areas.

e. Area Overlays. Area overlays are prepared to indicate the overall area of interest to the command that will require detailed visual aerial search. Normally the area of interest is divided into small, specific areas that can be searched with a single aerial mission. The size of an area which can be searched by one aircraft on one mission depends upon the aircraft used, the type of terrain to be covered, the enemy defenses in the area, the intensity of the search, the information being sought, and the capability of an aerial observer to visually search the area. Planning figures for area search operations must be developed by flying units through actual conduct of visual area search missions within the area of operations. Terrain features easily recognized from the air are used in defining the limits of the search area. For economy of time and aircraft, search areas should be oblong in shape to allow a minimum number of passes to obtain complete coverage (fig. 5–8). In planning area overlays, the G2 Air places emphasis for surveillance on secondary routes and those primary routes not used in preparation of route overlays. The letters of the alphabet, with the exception of I, O, R, and Z, are used as prefixes to the numerical designations applied to search areas. When the area of interest has been subdivided into search areas, those nearest the line of contact

CLASSIFICATION	TITLE	USE	PREPARING ECHELON			
			FIELD ARMY	CORPS	DIVISION	OTHER
ADMINISTRATIVE PROCEDURES	SECTION SOP	ESTABLISH SECTION ADMINISTRATIVE PROCEDURES.	X	X	X	OPTIONAL
	AERIAL SURVEILLANCE ANNEX TO UNIT INTELLIGENCE SOP	ESTABLISH PERTINENT ADMINISTRATIVE PROCEDURES WITHIN COMMAND.	X	X	X	OPTIONAL
BROAD PLANNING AIDS	G2 AIR SITUATION MAP	FRIENDLY AND ENEMY SITUATION IN AREA OF INTEREST.	X	X	X	X
	G2 AIR COLLECTION PLAN	DETERMINE BROAD AND SPECIFIC REQUIREMENTS.	X	X	X	OPTIONAL
	AERIAL RECONNAISSANCE AND SURVEILLANCE APPENDIX TO INTELLIGENCE ANNEX OF OPERATIONS ORDERS.	DIRECTION TO SUBORDINATE UNITS.	X	X	X	OPTIONAL
	AERIAL SURVEILLANCE PLAN	INFORMATION TO SUBORDINATE UNITS.	X	X	X	
	ROUTE OVERLAY (TAB A)	PREARRANGED ROUTE IDENTIFICATION CODE.	X			
	AREA OVERLAY (TAB B)	PREARRANGED AREA IDENTIFICATION CODE.	X			
	POINT OVERLAY (TAB C)	PREARRANGED POINT IDENTIFICATION CODE.	X			
	MASTER COVER TRACE	OVERLAY INDICATING IMAGERY AVAILABLE	X	X	OPTIONAL	
SPECIFIC PLANNING AND CONTROL AIDS IN ADDITION TO THOSE LISTED ABOVE	AIR RECONNAISSANCE REQUEST FORM	IDENTIFIES AND REQUESTS A SPECIFIC REQUIREMENT	X	X	X	X
	REQUEST OVERLAY (FLIGHT PLOT)	GRAPHIC SUPPLEMENT TO SUPPORT FORM FOR SPECIAL IMAGERY.	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL
	AERIAL SURVEILLANCE LOG	LISTING OF REQUESTS RECEIVED AND ACTION TAKEN.	X	X	X	OPTIONAL
	MISSION STATUS BOARD	CURRENT REFERENCE OF APPROVED MISSIONS.	X	X	X	
	MISSION FOLDERS	SEGREGATION OF REQUESTS BY STATUS OF ACTION.	X	X	X	
REPORTS	MISSION REPORT	INFORMATION RETURN OVERLAY BY MISSION.	X(BY ARSB)	X(BY G2 AIR REP)		
	PILOT TRACE	PILOT ROUTE OVERLAY BY MISSION.	X(BY AIR FORCE THRU ARSB)	X(BY ASC THRU G2 AIR REP)		
	IMAGERY INTERPRETATION REPORT	INTELLIGENCE REPORT FROM IMAGERY INTERPRETERS.	X(BY ARSB)	X(CORPS MI DET & ASC	X(DIV MI DET)	

Figure 5–5. Aerial surveillance/reconnaissance operational aids.

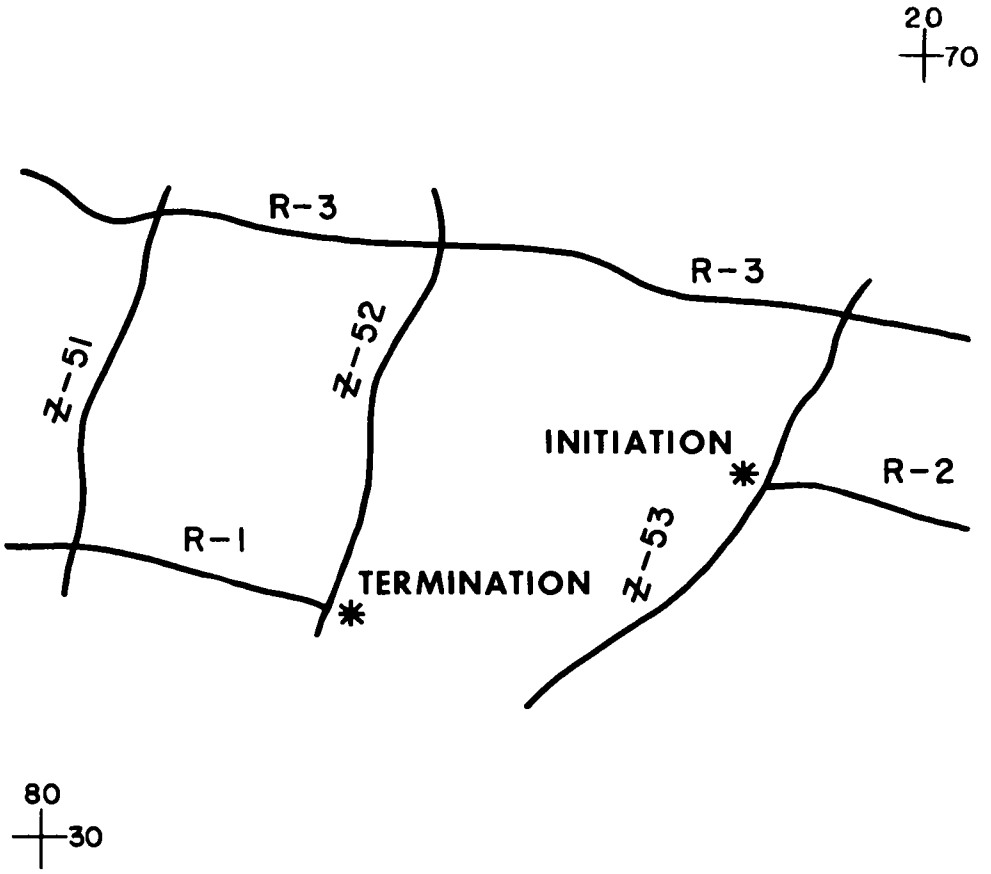


Figure 5-6. Route overlay (TAB A)— route continuation, axial and lateral route identification.

are given the prefix A followed by a number; the areas in the next row are given the prefix B followed by a number; etc. This system is continued until all the selected areas have been identified with letters and numbers.

f. Point Overlay. The point overlay is prepared by the G2 Air in response to requirements to collect intelligence information and support the development of specific targets. These key points are usually readily identifiable from the air and will facilitate in-flight target location and reporting. A pinpoint representing a coordinate, surrounded by a circle with a numerical identification, is plotted on the point overlay (fig. 5-9).

g. Base Plans. All three overlays (TABS A, B, and C) are prepared prior to operations and are referred to as the base plan. The route, area, and point numerical designations are referred to as base plan index numbers. The base plan normally is given a security classification commensurate with the classification of the plan which it supports. In anticipation of compromise of any portion of the base plan, alternate alphabetical and numerical designation for each overlay should be established in advance. When a change of designators is required due to compromise, the necessary changes are announced by utilizing one or more of the cryptographic systems established in the command signal operation instructions (SOI) in use by all elements of the command. Examples of cryptosystems which may be used are SOI operation codes or prearranged message codes.

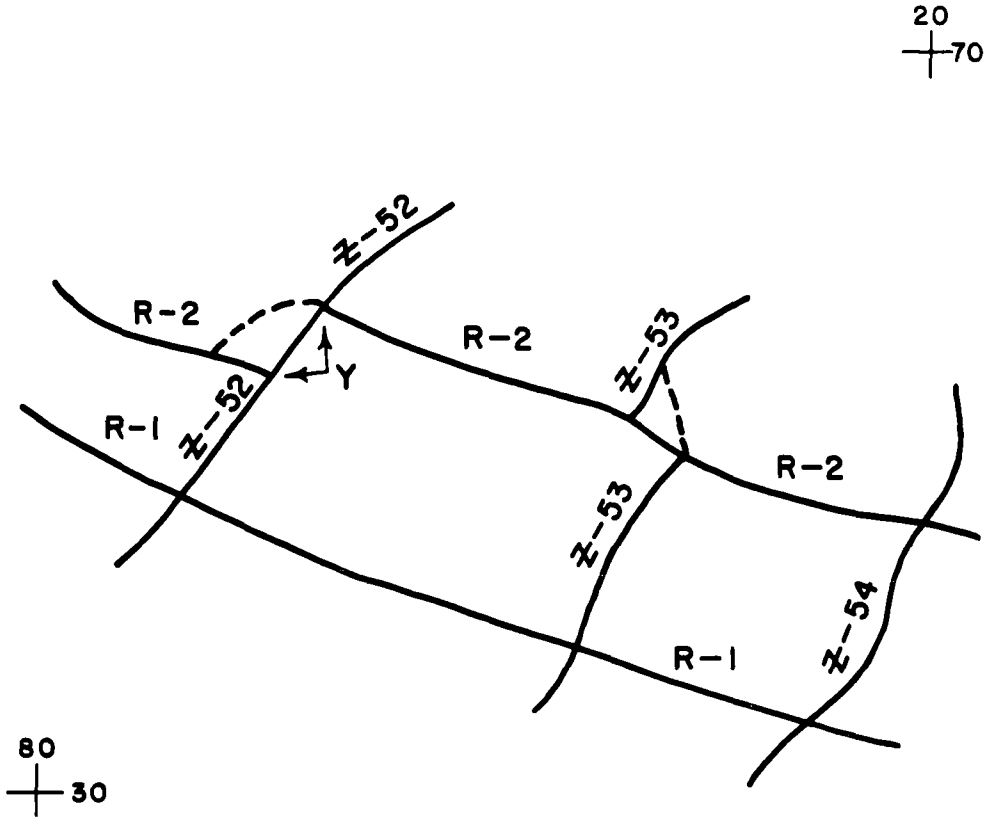


Figure 5-7. Route overlay (TAB A)— route initiation and termination.

5-20. Master Cover Trace

A master cover trace is an overlay showing the imagery available at an echelon of command or imagery interpretation detachment. It is used to indicate the status of current imagery available for a given area or target, thus preventing unnecessary waste of mission aircraft on duplication of effort. The master cover trace normally is maintained by the unit providing the imagery interpretation support to the command.

5-21. Air Reconnaissance Request

a. Section I of the air reconnaissance request form (fig. 5-10) is applicable for use by both the U.S. Armed Forces and all member nations of NATO. The format of section I complies with NATO Standardization Agreements (STANAG) Number 2102, Offensive Air Support Operations Message Formats, and Number 3277 (Edition No. 4), Air Reconnaissance Request Form. The information requested by section I is furnished by the requester for each specific aerial surveillance or aerial reconnaissance mission submitted. Normally, requests are transmitted by electrical means and the actual form is completed at the headquarters where the request is received. The format of the request provides a means of reporting and recording sufficient information to locate and identify the area of interest and the specific information desired from the mission. The request may be initiated at any echelon and is used for both immediate and preplanned missions. The G2 Air, or appropriate intelligence

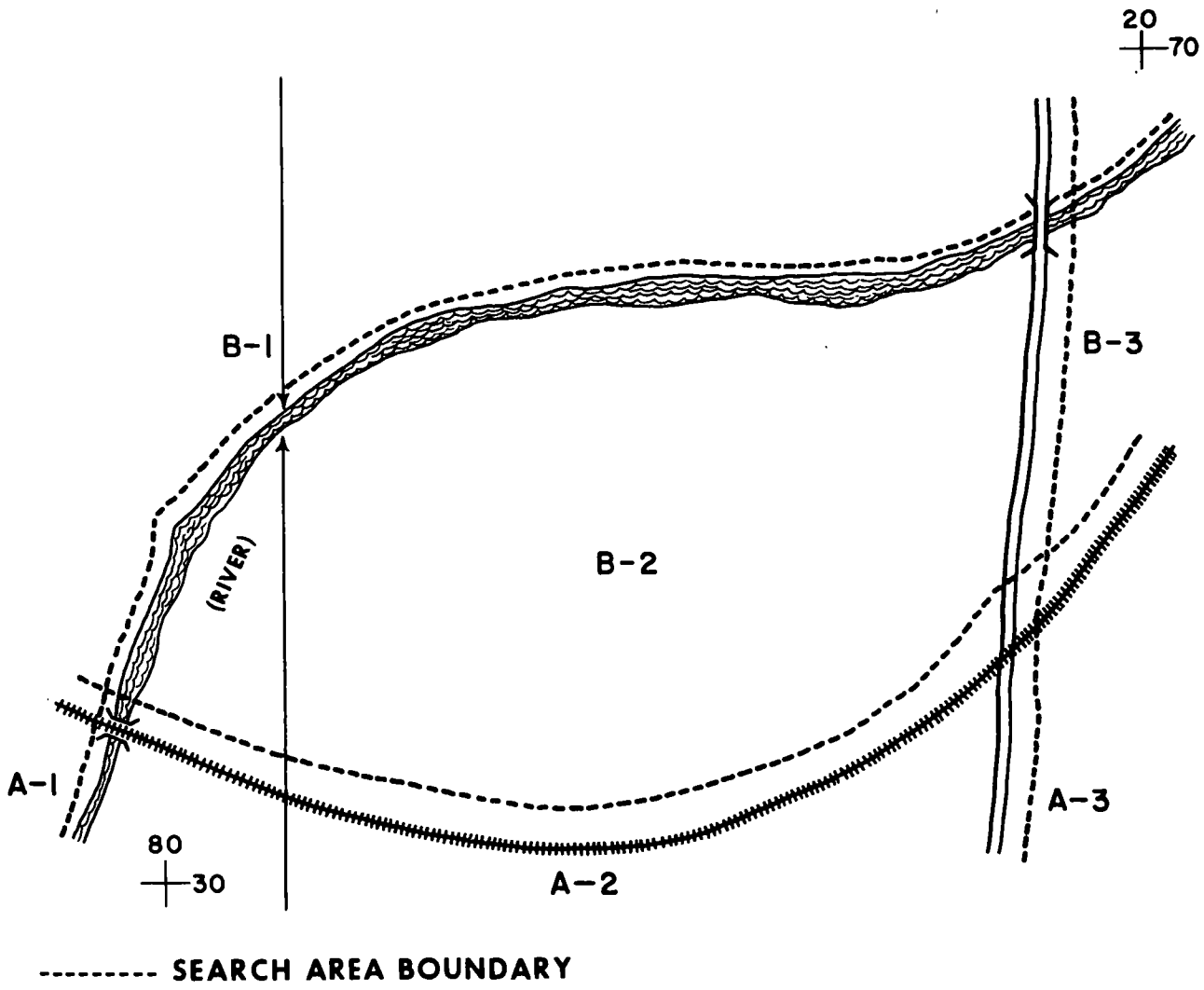


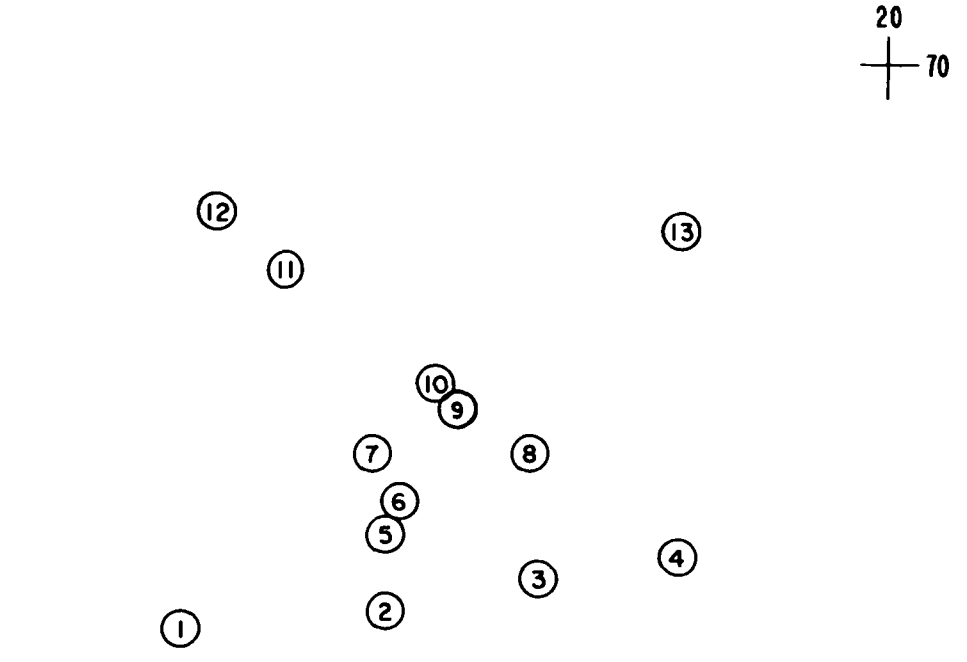
Figure 5-8. Area overlay (TAB B).

staff office below division level is charged with the responsibility for initiating the request in the proper format and integrating the requirement into the aerial surveillance cycle for appropriate action. The back of the request form provides instructions for completing the request.

b. As a suggested guide for administrative control and processing of requests, sections II, III, and IV of the air reconnaissance request form are provided. These sections allow the recording of all actions taken on a request to be shown on the request form itself. Instructions for completing sections II, III, and IV are contained on the back of the form.

5-22. Request Overlay

A request overlay is an optional graphic supplement to the aerial surveillance request. Normally prepared by image interpreters, it indicates the image-taking technique required to satisfy a special requirement to be accomplished by a particular photographic, infrared, or radar mission. Examples of a special requirement include numerous changes in flight paths or specific attitudes, angle and/or direc-



CONCENTRATION LIST

Conc. No.	Coordinates	Description	Remorks
1	43 09	Power Station & Distr Pt	Reservair to N.
2	65 10	RR & Highway Bridges	RR Steel 100' Highwoy concrete 75'
3	81 13	RR & Highway Bridge	RR Steel 100' Highwoy concrete 90'
4	97 16	RR & Highway Bridges	RR Steel 200' Highway Steel 200'
5	66 19	Worehousing	9 ea 200' x 400'
6	67 22	6 Borrocks 25' x 200'	
7	64 28	Chemical Plont - Coal Tar	
8	81 28	Mil Ord Storoge Yord	
9	73 32	Tonk Assembly Plont	80% Damaged
10	72 34	12 Borrocks & Parade Ground	
11	55 48	Highwoy Bridge, 2 lane, Concrete	150' long
12	48 54	Lumber Mill	
13	98 52	Military - Moint Shops	

Figure 5–9. Point overlay (TAB C).

FROM	TO	IMMED	PR PLAN	AIR RECONNAISSANCE REQUEST

SECTION I

L. ORIGINATORS REQUEST NUMBER _____

M. TYPE OF RECONNAISSANCE _____

N. NATIONAL MAP SERIES AND SHEET NUMBER _____

O. DESCRIPTION OF TARGET AND LOCATION _____

P. OBJECTS OF REQUEST AND RESULTS DESIRED _____

Q. PHOTO SCALE OR LIMITS ACCEPTABLE _____

R. NUMBER OF PRINTS, PLOTS OR REPORTS REQUIRED _____

S. DELIVERY ADDRESS _____ DATE _____ TIME _____

T. LATEST ACCEPTABLE _____ DATE _____ TIME _____

U. SPECIAL INSTRUCTIONS _____

NAME/RANK/POSITION OF REQUESTER	NAME/RANK/POSITION OF APPROVING OFFICER

SECTION II - ARMY ACTION

1. RECEIVED AT DTG ____Z	2. BY LOCATION CHECKED DTG ____Z	3. COORDINATED: ARTY: AIR DEF: AVN
4. ☐ APPROVED ☐ DISAPPROVED	5. REASON FOR DISAPPROVAL	
6. FORWARD TO BY DTG ____Z	7. REQUESTING UNIT NOTIFIED DTG ____Z	8. MIBN (ARS) NOTIFIED DTG ____Z

SECTION III - AF ACTION

1. RECEIVED AT DTG ____Z	2. BY LOCATION CHECKED DTG ____Z	
3. ☐ APPROVED ☐ DISAPPROVED	4. REASON FOR DISAPPROVAL	
5. FORWARD TO BY DTG ____Z	6. RETURNED TO ARMY BY	

SECTION IV - AIR MISSION DATA

1. MISSION NR / ARMY MISSION REQ NR	2. ACCOMPLISHING ORGANIZATION NOTIFIED DTG ____Z	
3. UNIT CALL SIGN	4. NUMBER AND TYPE AIRCRAFT PRIORITY	
5. TOT	6. CONTROL INFORMATION	
7. ARMY MISSION DATA	8. CRC NOTIFIED DTG ____Z	OASC/TACC NOTIFIED DTG ____Z
9. OTHER COORDINATION		

Figure 5–10. Air reconnaissance request form.

EXPLANATORY NOTES

SECTION I. TO BE USED BY ANY ARMY/AIR FORCE UNIT REQUESTING AIR RECONNAISSANCE

L. ORIGINATOR'S REQUEST NUMBER: EACH REQUEST WILL BE GIVEN A 3 PART REQUEST NUMBER. THE PREFIX WILL BE THE NUMERICAL OR LETTER DESIGNATION OF THE REQUESTER. SECOND PART IS THE RECONNAISSANCE REQUEST NUMBER OF THE DAY STARTING WITH 1 AND INCREASING CONSECUTIVELY THROUGHOUT THE DAY. THE SUFFIX WILL BE THE DATE THE MISSION IS TO BE PERFORMED, THE DATE THE MISSION IS FLOWN. EXAMPLE: 43-3-10 THE 3RD RECCE REQUEST BY THE 45TH INFANTRY DIVISION OF THE 10TH OF THE MONTH.

M. TYPE OF RECONNAISSANCE: FOR EXAMPLE: VISUAL, ELECTRONIC, WEATHER, FIRE CONTROL OR PHOTOGRAPHIC RECONNAISSANCE (VERTICAL, OBLIQUE, IR, SLAR OR REPRINT PHOTOGRAPHY) THIS PARAGRAPH SHOULD BE LEFT BLANK UNLESS IT IS UNDERSTOOD FULLY WHAT THE SELECTED TYPE OF RECONNAISSANCE CAN ACCOMPLISH.

N. NATIONAL MAP SERIES AND SHEET NUMBER: OWING TO THE LARGE VARIETY OF MAPS USED, BOTH IN TRAINING AND OPERATION BY NATIONS, THESE DETAILS MUST BE GIVEN IN FULL

O. DESCRIPTION OF TARGET AND LOCATION: TO INSURE THAT THE RECIPIENT OF THE REQUEST UNDERSTANDS THE REQUIREMENTS, IT IS NECESSARY TO GIVE AN EXACT LOCATION. E.G., RAILWAY BRIDGE 775386. IN THE CASE OF OBLIQUE, THE NEAR BOUNDRY OF THE AREA TO BE PHOTOGRAPHED WILL BE GIVEN. ROUTE AND AREA BOUNDRIES WILL BE GIVEN FOR ROUTE OR AREA RECONNAISSANCE.

P. OBJECT OF THE REQUEST AND RESULTS DESIRED: IT IS IMPORTANT THAT THE EXACT PURPOSE OF THE REQUEST IS STATED IN ORDER THAT THE MOST SATISFACTORY RESULTS MAY BE OBTAINED.

Q. PHOTO SCALE OR LIMITS ACCEPTABLE: WHENEVER POSSIBLE, THIS HEADING SHOULD BE FILLED IN ON THE ADVICE OF AN IMAGERY INTERPRETER. THE SCALE SHOULD BE QUOTED IN FIGURES, E.G., 1/1000D.

R. NUMBER OF PRINTS, PLOTS, OR REPORTS REQUIRED: THIS SHOULD NEVER EXCEED THE NUMBER ACTUALLY REQUIRED. IF AN IMAGERY INTERPRETATION REPORT WILL SUFFICE, PRINTS SHOULD NOT BE ORDERED.

S. DELIVERY ADDRESS, DATE, TIME: STATE CLEARLY WHERE THE PRINTS, PLOTS, OR REPORTS ARE TO BE DELIVERED AND THE TIME AND DATE ON WHICH THEY ARE REQUIRED. IF THERE IS NO HASTE, AS MUCH TIME AS POSSIBLE SHOULD BE GIVEN FOR FINAL DELIVERY SO AS TO ALLOW REQUESTS OF A MORE URGENT NATURE TO BE GIVEN PRIORITY.

T. LATEST ACCEPTABLE TIME AND DATE: THE DATE OR TIME AFTER WHICH THE PRINTS, PLOTS, OR REPORTS ARE NOT LONGER REQUIRED. IF DELIVERY CANNOT BE MADE BY THE DATE STATED, THE REQUEST WILL BE CANCELED

U. SPECIAL INSTRUCTIONS: THE DEGREE OF URGENCY, OR WHEN MAKING MORE THAN ONE REQUEST, THE DEGREE OF PRIORITY, AND THE SECURITY CLASSIFICATION OF THE MATERIAL REQUESTED. GIVE ANY INSTRUCTIONS OR INFORMATION NOT ALREADY PROVIDED, THAT WILL AID THE PLANNING, OR SUCCESSFUL ACCOMPLISHMENT OF THE MISSION, NAME AND TELEPHONE NUMBER OF CONTACT OFFICER AND DESIRED TIME OVER TARGET IF APPLICABLE.

SECTION II. COMPLETED BY ARMY ACTION AGENCY AT ECHELON OF COMMAND ABOVE REQUESTING AGENCY.
ITEM 1: INDICATE UNIT, DATE, TIME.
ITEM 2, 4, 6, 7, 8: INDICATE INITIAL, DATE, TIME.

SECTION III. COMPLETED BY AIR FORCE ACTION RECONNAISSANCE SECTION.
ITEM 1: INDICATE UNIT, DATE, TIME. ITEM 2, 3, 5: INDICATE INITIALS, DATE, AND TIME.

SECTION IV. ITEM 3: AIRCRAFT CALL SIGN OR NUMBER. ITEM 6: AGENCY CONTROLLING MISSION.
ITEM 7: TO INDICATE METHOD WHICH MISSION DATA (SECTION I) WILL BE TRANSMITTED TO THE ACCOMPLISHING UNIT, I.E., FRAG ORDER OR "IMMEDIATE REQUEST".
ITEM 8: SHOW INITIAL DATE AND TIME.

Figure 5-10—Continued.

tion of flight, lengths of flight lines, and approach direction to a target area. A request overlay is only required if the mission must satisfy unusual interpretative requirements which cannot be presented adequately in the context of the actual air reconnaissance request format. This overlay is prepared jointly by the interpreter and the flying unit when circumstances permit.

5–23. Mission Status Board

A mission status board reflects the status of immediate and preplanned mission. Information about each mission is filled in as it becomes available. It assists the G2 Air in following the conduct of each mission and is a base from which to initiate changes in plans caused by changing situations. Each echelon maintaining a mission status board uses the format that best suits its operational needs. An example of a mission status board is shown in figure 5–3.

5–24. Mission Folders

Mission folders assist the G2 Air by segregating requests according to status of action. The following folders are maintained:

a. Approved requests.

b. Disapproved requests.

c. Completed missions.

d. Aborted missions. (Missions not completed due to weather, enemy air defenses, equipment malfunction, or rerouting of mission aircraft to higher priority mission while en route.)

5–25. Pilot Trace

A pilot trace is an overlay showing the pilot's concept of the course flown and the points at which imagery was exposed. It is used to assist interpreters in correlating the resultant imagery to the terrain.

5–26. Imagery Interpretation (II) Reports

Imagery interpretation reports and mission reports are discussed in chapters 9 and 10.

Section VI. COORDINATION

5–27. General

The G2 Air coordinates the aerial surveillance effort with those agencies and elements having an effect on, or affected by, the collection of intelligence through aerial means. This coordination is necessary for the efficient accomplishment of the aerial surveillance intelligence cycle from the development of requirements to the dissemination of the intelligence produced. Coordination with the general and special staff sections of the command and with the G2 Air sections at higher, lower, and adjacent headquarters as well as with elements that accomplish operational functions is essential.

5–28. The Field Army

The field army G2 Air works closely with the staff sections within the headquarters such as engineer, artillery, aviation, chemical, signal, air defense, and transportation. Close coordination for both long-range and day-to-day planning is conducted with the G3 Air FSCE, the TACC, the MIBARS, the Military Intelligence Battalion, Field Army, and attached Army Security Agency personnel.

5–29. Corps and Division

Both the corps and the division G2 Air coordinate in a manner similar to the field army G2 Air; however, such coordination is reduced in scope. Examples of corps coordination are with the corps engineer for mapping photography requirements or photomap reproduction, with the corps artillery section on target and damage assessment information, and with the corps signal officer on communications matters. The corps G2 Air also coordinates tasking of the aerial surveillance company for mission support, interpretation, reproduction of imagery, and information dissemination. At division, coordination is conducted with the G3 for planned operations, with the division aviation officer regarding the availability of visual aerial surveillance means, with the division signal officer regarding communications and signal photographic reproduction support, with the FSE regarding damage assessment mission op-

erations, and with the ACE regarding use of airspace.

5-30. Army Security Agency

a. Integration of signal intelligence (SIGINT) and imagery intelligence at the earliest practical moment in the intelligence production effort is a clearly defined requirement to assure the most effective target acquisition, surveillance, and reconnaissance support to the tactical commander. SIGINT information can complete, confirm, or refute, and, in many instances, serve as the basis for initiating additional reconnaissance and surveillance missions.

b. To facilitate timely integration, obviate handling delays often incurred when dealing with special intelligence, and assist the tactical commander in the effective employment of SIGINT resources, EW/cryptologic offices are assigned to the staffs at army, corps, and divisions. Also, the U.S. Army Security Agency places SIGINT units in support of each division or separate brigade, corps, and army. These units provide personnel for the electronic warfare elements (EWE) of the TOC to assist in integrating SIGINT results into electronic warfare and other tactical operations.

c. In order to effect proper coordination, the operations center of the supporting ASA unit will be located as close to the CP or TOC as feasible, in accordance with the supported commander's desire. It is located to provide optimum command and control over ASA deployed elements and at the same time be responsive to the requirements of the supported command. Secure communications between the ASA operations center and the CP or TOC will play a critical role in these operations.

CHAPTER 6
COMMUNICATIONS

6–1. General

a. Communications means for aerial surveillance and reconnaissance activities consist of voice radio, radio teletype nets, and other teletypewriter circuits using command multichannel communications systems. These means provide communications facilities for both the transmission of requests for aerial surveillance and reconnaissance missions and the rapid dissemination of the intelligence information produced from aerial missions. The nets and equipment utilized include both Army and Air Force sources. Army equipment is either provided for in unit TOE or by the organic signal unit at each command level; Army communications are coordinated through the command signal officer. Air Force elements within the air ground operations system provide the Air Force communications nets. Whenever possible, sole user point-to-point circuits are established through the area communications system to provide a backup means of communications.

b. The introduction of the aerial surveillance company and the tactical imagery interpretation facility (TIIF) with its organic SSB-Voice-RATT communications equipment has required the development of new nets and means of communications between G2/S2 Air elements and the aerial surveillance and reconnaissance community. For this reason, this discussion of available communications means will include current communications nets as well as the new communications means dictated by these new organizations and equipment. In actual practice, portions of both the current and new communications systems may exist concurrently during the transitional period. Figure 6–1 depicts the current aerial surveillance and reconnaissance communications nets which are discussed below.

6–2. Current Aerial Surveillance and Reconnaissance Communications Nets

a. Army Air Request Net. The Army air request net provides AM (voice, CW, or RATT) communications, with integral security equipment, between armored cavalry regiments, divisions, corps, and the field army. This net is used jointly by G2 Air and G3 Air personnel to submit preplanned close air support and aerial surveillance and reconnaissance requests from lower to higher headquarters. There are as many Army air request nets as there are corps in the field army. The stations of the net have their terminals in the TOC at each echelon. These stations are provided and operated by the supporting signal unit at each level. The net control station (NC) is located at the FATOC.

b. Division Air Request Net. The division air request net provides AM (voice-CW) communications between maneuver battalions, brigades, the cavalry squadron, and the division TOC. This net is used jointly by G2/S2 Air and G3/S3 Air personnel to submit preplanned close air support and aerial surveillance and reconnaissance requests from lower to higher headquarters. There are as many division air request nets as there are divisions in the field army. The division station at the TOC is provided by the division signal battalion. The other stations are part of the unit TOE. The NCS is in the division TOC.

c. Air Force Air Request Net. Air Force communications means are provided for the submission of immediate requests for close air support and aerial surveillance and reconnaissance requests from lower to higher headquar-

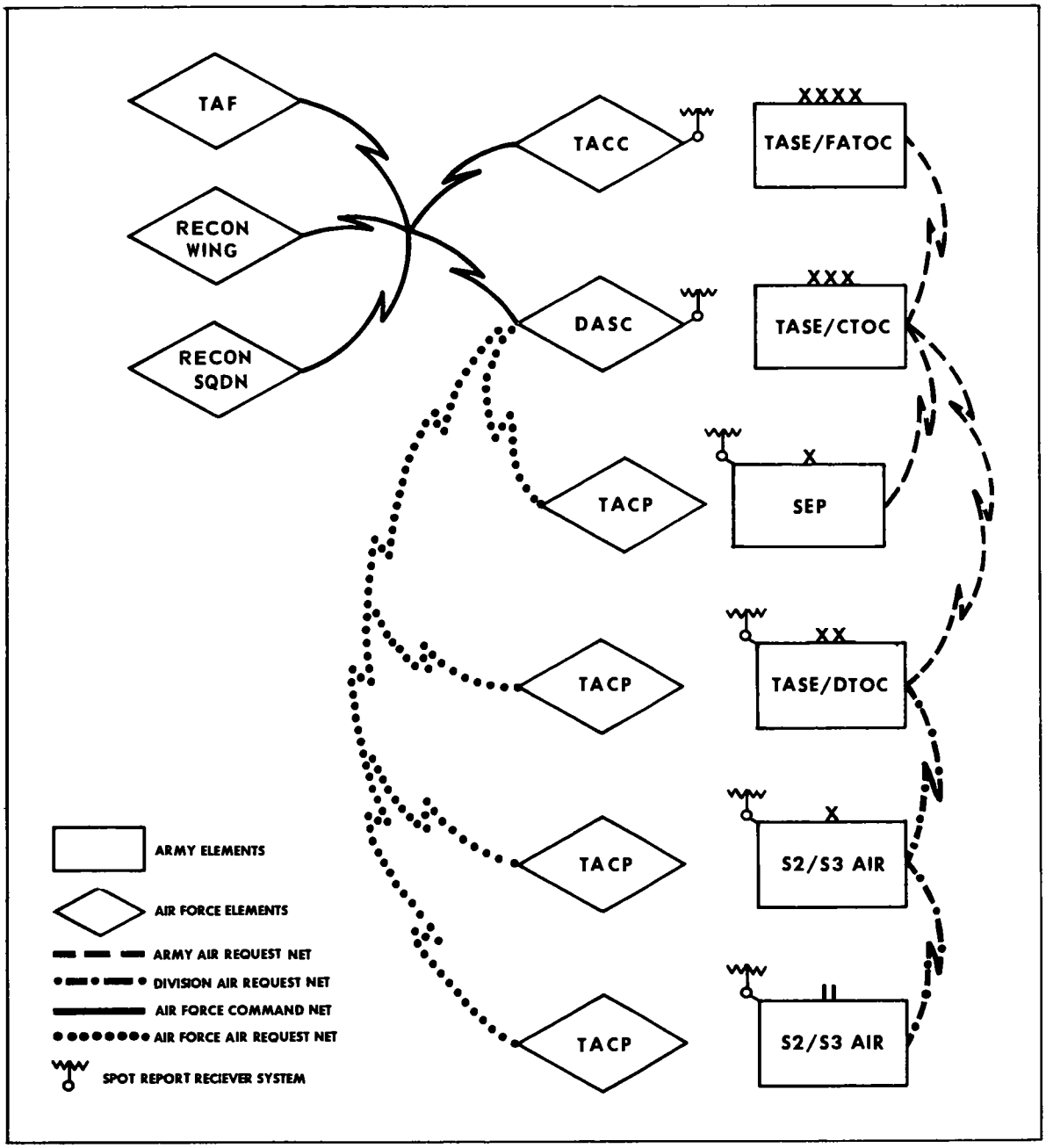


Figure 6–1. Current aerial surveillance and reconnaissance communications net.

ters. Stations in this net exist at the TACP with each battalion, brigade, division, and at the DASC of each corps. The NCS for the net is at the DASC. A detailed discussion on the operations of this net is contained in paragraph 5–9*c*. Tasking of USAF or Army organic flying units in satisfaction of these immediate requests is accomplished by the G2 Air at echelons having the allocated sorties.

d. Spot Report Receiver System. For the rapid dissemination of important visual observations made by Army and Air Force crews in flight, UHF radios are located at the field army (in the TACC), at corps (in the DASC), at the

division TOC, and at each brigade, maneuver battalion, and cavalry squadron. These radios are used to monitor the Air Force in-flight report net for in-flight transmissions. To insure complete dissemination of information received, the unit SOP should specify rebroadcast of reports as required over the division warning broadcast net or the division operations intelligence net. Army organic aircraft employ an air-to-ground inflight report technique to keep ground commanders informed on significant sighting. This is discussed in paragraph 6–4*d*.

e. Air Force Command Net. Air Force communications means also exist between the TACC, DASC, Tactical Air Force headquarters, and the Air Force flying units. This net provides the communications means for the TACC to task Air Force reconnaissance units on preplanned missions and provides both the TACC and the DASC with direct communications to Air Force flying units scheduled to accomplish immediate missions.

f. Additional Communications Means. Command SOP and SOI should establish normal traffic procedures for submission of immediate and preplanned requests over the nets discussed above. To provide additional means for submission, requests also may be transmitted over other nets that are available. At division level and below, the primary additional means consist of the brigade operations/intelligence net (between battalions and brigades) and the division operations/intelligence net (between brigades and the division headquarters). Alternate additional means at these levels include the brigade command nets, the division general purpose net, and the division command net. Above division level, the corps and army command nets provide semiautomatic teletypewriter circuits with other RATT nets for alternate communications means. In addition to the Army communications nets, Air Force air request nets used for submission of immediate air requests also may be used for preplanned requests establishing local Army-Air Force agreements. When Air Force channels are used, preplanned requests must be transmitted through all intermediate Army headquarters for necessary staff action.

6–3. New Aerial Surveillance and Reconnaissance Communications Nets

a. Military Intelligence Battalion, Air Reconnaissance Support, (MIBARS) Field Army Operations Net (fig. 6–2). The MIBARS operations net (SSB-CW-voice) functions between the MIBARS detachments located with the AF reconnaissance squadrons, the MIBARS battalion operations and intelligence section (NCS), and the imagery interpretation team from the MIBARS battalion that supports the G2 Air at the TASE of the FATOC. (This new net replaces the former air reconnaissance liaison officer (ARLO) net and portions of the old Army information net.) This new net can carry imagery interpretation and ARLO reports and allows the field army G2 Air to pass information on immediate and preplanned missions directly to the MIBARS headquarters and its detachment.

b. Corps G2 Air-Aviation Aerial Surveillance Company Operations Net (fig. 6–3). This net (SSB-RATT-voice) provides communications between the corps G2 Air at the TASE of the CTOC and the corps aviation aerial surveillance company. One imagery interpretation team with TIIF from the corps military intelligence unit, collocated with the G2 Air at the TASE provides the communications for the G2 Air section, while the communications for the aviation aerial surveillance company is authorized by TOE. When designated, the parent headquarters, which may be the military intelligence unit at corps will be added to this net. Other TIIF organic to the corps military intelligence unit and the aviation aerial surveillance company are also added to this net when they are provided the necessary communications equipment. This net can carry imagery interpretation and debriefing reports from the aviation aerial surveillance company and other corps TIIF to the G2 Air. It also allows the G2 Air to pass requirements and information on immediate and preplanned missions directly to the aviation aerial surveillance company.

c. Division Imagery Interpretation Team Communications Equipment. The division G2 Air is supported by one imagery interpretation

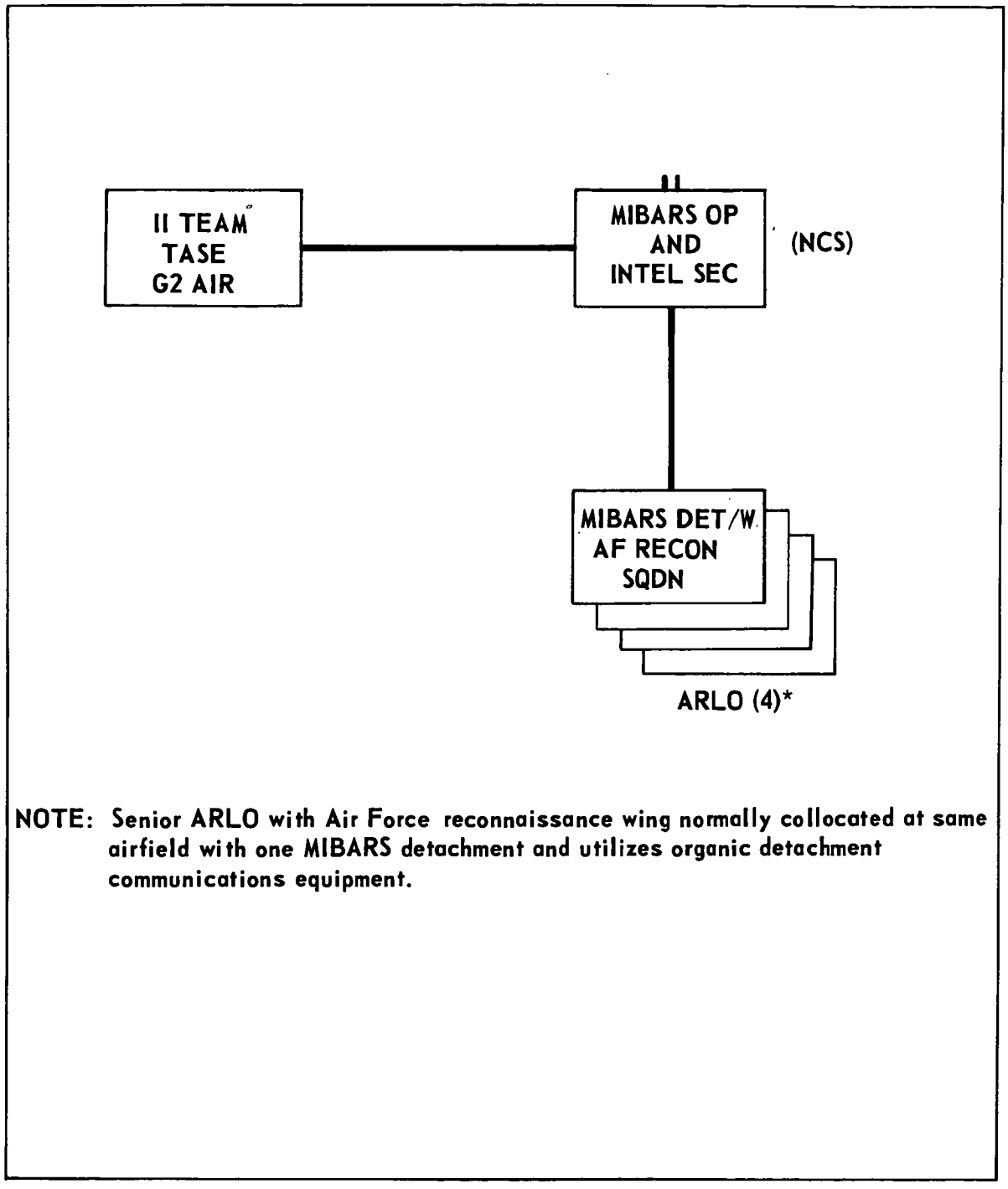


Figure 6–2. MIBARS operations net.

team with TIIF at the TASE of the DTOC. This team has communications equipment that will net with the radio sets in the MIBARS and corps G2 Air-aviation aerial surveillance company operations nets; however, it is not a regular station in either net.

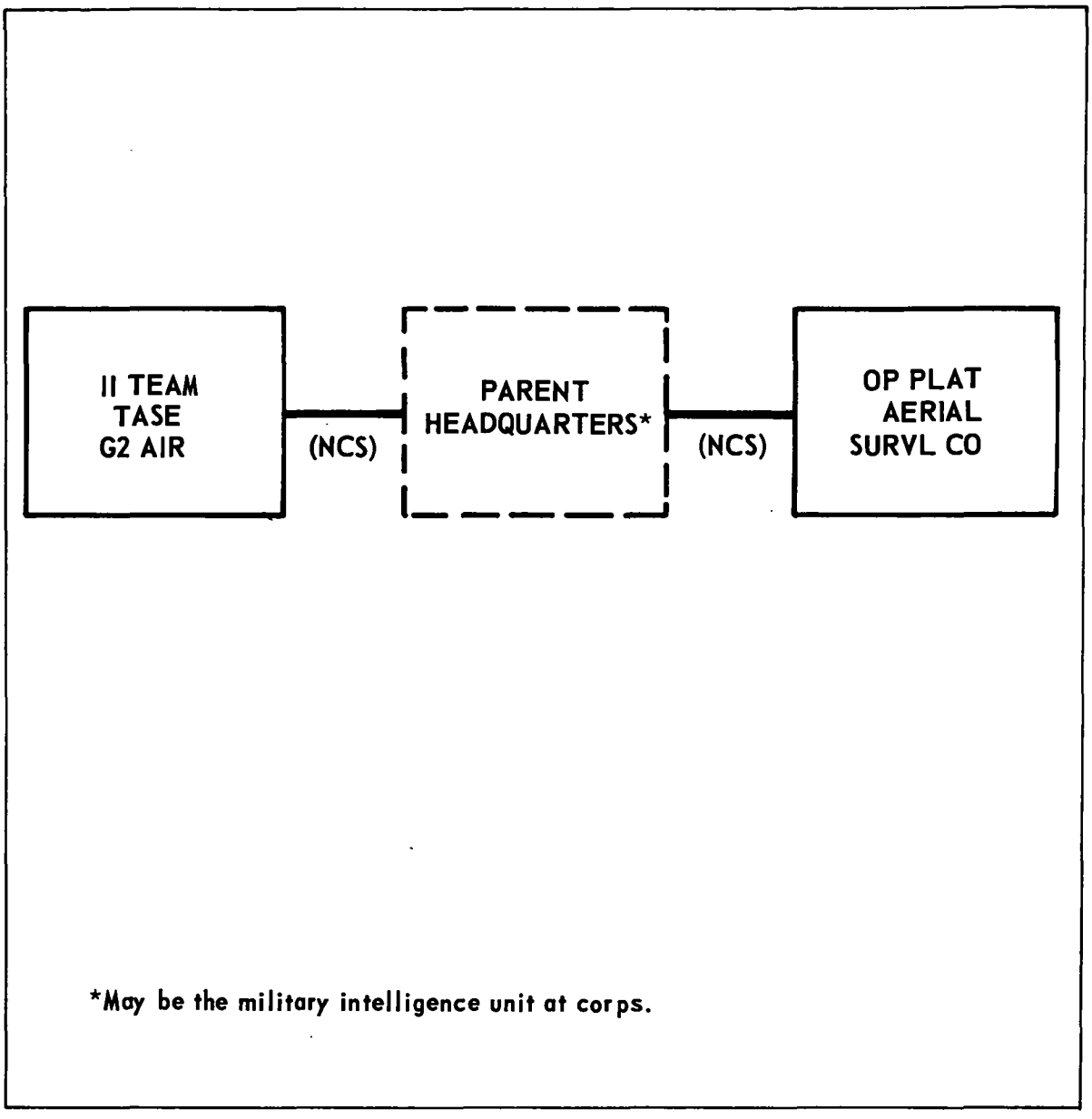


Figure 6-3. Corps G2 Air-aviation aerial surveillance company operations net.

d. Alternate G2 Air Means of Communications.

(1) Communications equipment in the MIBARS operations net, the corps G2 Air-aviation aerial surveillance company operations net, and the division imagery interpretation team TIIF are identical, they allow the establishment of communications between G2 Air sections at each level when required and authorized.

(2) Executing instructions for immediate air requests approved by corps G2 Air are passed directly from the corps DASC to the AF reconnaissance squadron. To match their responsiveness and insure that the Army ARLO and MIBARS detachment collocated with the AF reconnaissance squadron are also alerted and furnished with full information on the mission, the G2 Air at corps passes mission requirements directly to the MIBARS detach-

ment over the MIBARS operations net. At the same time, the corps G2 Air must insure that an information copy of the mission requirements is also furnished the G2 Air at field army. This can be accomplished by including the field army G2 as an information addressee when transmitting the original message over the MIBARS net.

(3) When missions flown by either the Air Force or the corps aviation aerial surveillance company result in information of significant tactical value, the appropriate MIBARS detachment, aviation aerial survillance company imagery interpretation section, or ARLO having the information transmits the report directly to the requester utilizing the common facilities at each echelon. However, information transmitted must also be reported to the respective G2 Air as expeditiously as possible.

6–4. Other Communications Systems

a. The field army area communications system may be used for routine aerial surveillance and reconnaissance operational traffic when other communications systems require supplementation.

b. Normal communications means used for aerial surveillance and reconnaissance operations, as discussed in paragraph 6–2, may become overloaded or reduced because of displacement of a headquarters. Provisions must be made at the alternate TOC to share other nets to insure that adequate means of submitting requests and receiving information continue to exist. When possible, Air Force nets may be utilized to carry priority operational traffic for the period of the move.

c. When missile commands support allied units, provisions must be made to augment their communications capabilities to provide a rapid means of requesting and disseminating aerial reconnaissance and surveillance information.

d. Army aircraft are equipped with radios capable of netting with the tactical radios of the ground elements. This provides a means of disseminating information of immediate tactical significance. Procedures, frequencies, and call signs to be used must be coordinated between the flying crew and the ground units prior to the flight or established in command SOP and SOI.

6–5. Signal Security and Passive Electronic Countermeasures

The mission of aerial surveillance units makes them especially lucrative targets for signal intelligence and electronic warfare exploitation. The units must utilize all available signal security and countermeasure means to reduce the effectiveness of such exploitation and its impact on surveillance and reconnaissance operations.

a. Signal Security. Special attention is required to SIGSEC measures designed to minimize enemy SIGINT or passive electronic countermeasures exploitation on friendly communications, radars, and infrared surveillance devices. For additional details, see FM 32–5.

b. Electronic Warfare. SLAR and infrared devices are particularly vulnerable to noncommunications countermeasures. For general guidance in employment of electronic countermeasures and unit radar and surveillance operations, see FM 32–20.

CHAPTER 7
MILITARY INTELLIGENCE BATTALION AIR RECONNAISSANCE SUPPORT, FIELD ARMY

Section I. MISSION, ORGANIZATION, AND FUNCTIONS

7–1. Introduction

This chapter furnishes guidance pertaining to the operations and employment of the Military Intelligence Battalion, Air Reconnaissance Support (MIBARS), Field Army, and its organic elements.

7–2. Mission

The overall mission of the MIBARS is to produce and disseminate intelligence information obtained or developed from Tactical Air Force reconnaissance elements operating in support of the field army and to provide liaison between the field army and the reconnaissance elements of the supporting Tactical Air Force.

7–3. Organization and Functions

a. General. A MIBARS is organized as depicted in figure 7–1. One battalion normally is assigned to each field army or independent corps. The functions of the MIBARS are to—

(1) Process, interpret, annotate, reproduce, and deliver imagery obtained from the Tactical Air Force elements operating in support of the field army or independent corps.

(2) Coordinate imagery interpretation and reproduction functions from widely separated reconnaissance airfields and from the vicinity of the supported field army headquarters or independent corps.

(3) Disseminate all intelligence information obtained through imagery interpretation and visual aerial reconnaissance sightings by the supporting Tactical Air Force reconnaissance elements.

(4) Provide air reconnaissance liaison officers (ARLO) to Tactical Air Force reconnaissance elements operating in support of the field army or independent corps.

(5) Brief and debrief tactical air reconnaissance aircraft crews.

(6) Provides deployed operations parallel to any dispersion of Tactical Air Force reconnaissance wing.

b. Headquarters and Headquarters Company. The mission of the headquarters and headquarters company, MIBARS, is to provide command, control, administration, and logistical support for the battalion; to perform detailed imagery interpretation for the field army; to provide the means for immediate dissemination of information and imagery to the using units on a 24-hour basis; and to provide liaison and coordination with the Tactical Air Force reconnaissance units supporting the field army. The functions of the headquarters and headquarters company, MIBARS, are to—

(1) Provide command, control, and staff supervision for the battalion.

(2) Coordinate operations with the Tactical Air Force reconnaissance elements in support of the field army.

(3) Provide a senior ARLO to the major Tactical Air Force reconnaissance unit.

(4) Provide administrative and logistical support for the battalion (with the exception of medical and religious facilities which must be furnished by other units).

(5) Perform detailed interpretation of aerial imagery, as required.

(6) Reproduce, identify, and package aerial imagery.

(7) Deliver aerial imagery, as required, from each reconnaissance airfield army headquarters, and to each corps and division of the field army.

c. Military Intelligence Detachment, MIBARS. The mission of the military intelligence

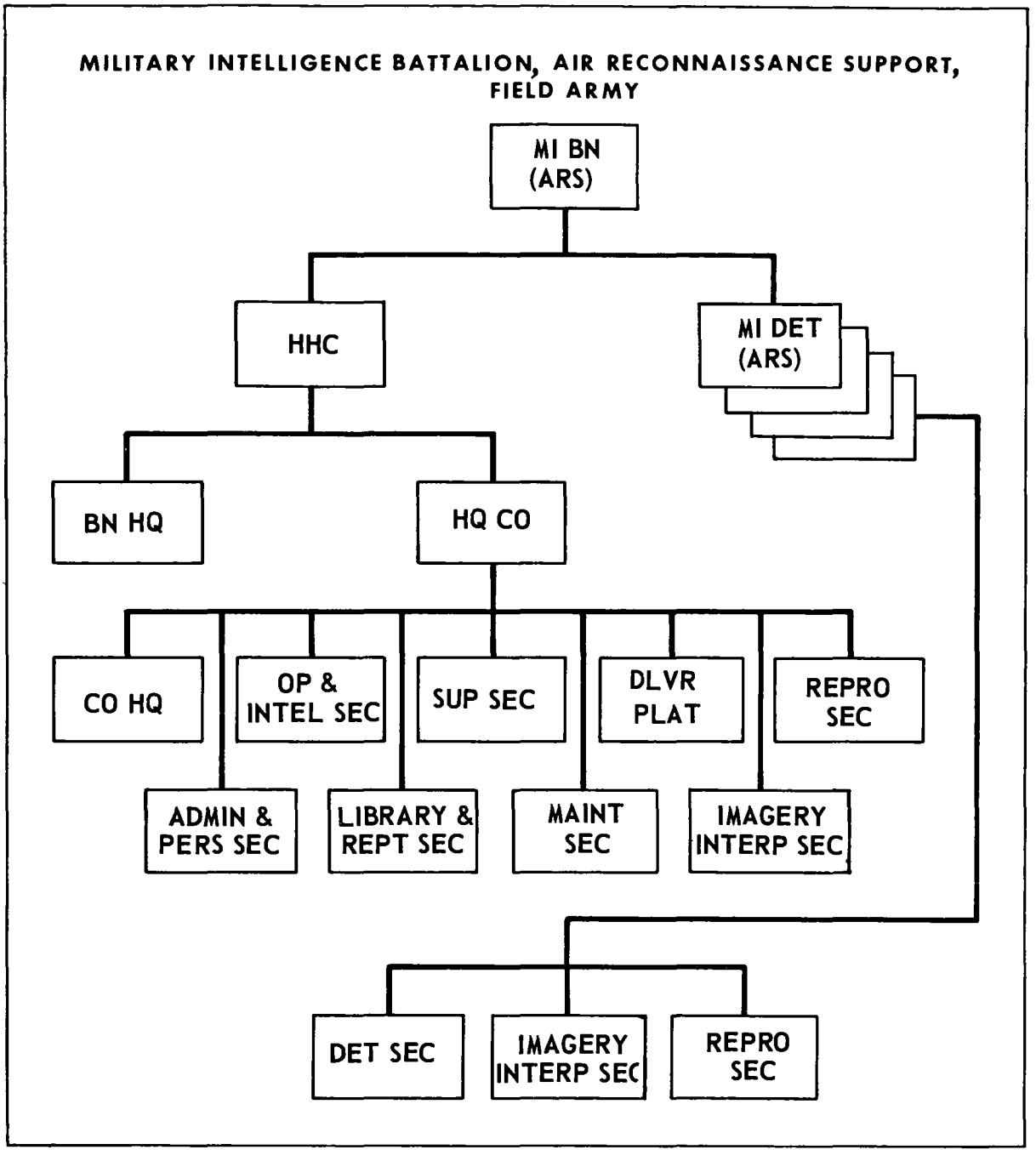


Figure 7–1. Military intelligence battalion, air reconnaissance support, field army.

detachment, MIBARS, is to interpret and reproduce aerial imagery obtained by the Tactical Air Force and to provide liaison between field army and the Tactical Air Force reconnaissance squadrons. The functions of the military intelligence detachment, MIBARS, are to—

(1) Plot and perform immediate imagery interpretation and to prepare and disseminate priority imagery interpretation reports on a 24-hour basis.

(2) Reproduce, identify, and package aerial imagery.

(3) Provide liaison with reconnaissance elements of the Tactical Air Force.

(4) Brief and debrief Air Force reconnaissance aircrews.

Section II. CONCEPT OF EMPLOYMENT

7–4. General

The responsibility for staff supervision of the MIBARS lies with the field army G2. He exercises this supervision through his G2 Air.

7–5. Location

The headquarters and headquarters company, MIBARS, usually is located in the vicinity of the field army headquarters. The four military intelligence detachments are dispersed with Tactical Air Force reconnaissance elements, normally squadrons, of the supporting Tactical Air Force reconnaissance wing.

7–6. Battalion Headquarters and Headquarters Company

a. Functions. The battalion headquarters and headquarters company is composed of elements that provide three separate functions—operations, administration, and logistics. In most instances, the battalion headquarters and headquarters company will be located together, either in the vicinity of the instrumented field army airstrip, field army main CP, or the FATOC. The battalion commander operates from both the battalion headquarters and from the TASE of the FATOC. The operations and intelligence section is located with the battalion headquarters and acts as the focal point for all battalion operations. The imagery interpretation section, reproduction section, and library and reports section are under the operational control of the operations and intelligence section and generally will be located within the battalion headquarters complex. The delivery platoon is also under the operational control of the operations and intelligence section, but normally it is located at the instrumented field army airstrip. One TIIF from the imagery interpretation section is located adjacent to the TASE of the FATOC and provides the G2 Air element with imagery interpretation facilities and communications means into the MIBARS operations net. The remaining battalion staff and headquarters company elements are located with the battalion headquarters.

b. Peculiarities of MIBARS Battalion Staff.

(1) The MIBARS S2 is also designated as the S3 operations officer as there is no S3 authorized by TOE.

(2) The assistant S2 is also designated as an assistant S3 operations officer. He usually will perform duties with the operations and intelligence section.

(3) The senior air reconnaissance liaison officer (ARLO) normally is located with the Tactical Air Force reconnaissance wing headquarters.

c. Operations and Intelligence Section. The operations and intelligence section is under the direct supervision of the battalion S2. It performs the functions of planning, coordinating, and supervising the battalion's operations and intelligence activities. This section maintains the battalion switchboard and teletype terminals. One image interpreter from this section normally is attached to the senior ARLO as an enlisted assistant. This section provides operational control over the following sections of headquarters company:

(1) *Imagery interpretation section.* The imagery interpretation section normally is utilized to prepare general imagery interpretation reports (GIIR), mosaics, and other long-range planning functions. One TIIF from this section is located adjacent to the operations and intelligence section to provide communications between the MIBARS detachments and the G2 Air element at the TASE of the FATOC. The second TIIF in the section is located at the TASE of the FATOC to support the G2 Air element. Both TIIF perform imagery interpretation as directed by the G2 Air or the battalion S2.

(2) *Delivery platoon.* The delivery platoon delivers reports and imagery and provides courier service for the MIBARS. It is capable of providing daily delivery of imagery and reports from each reconnaissance airfield to the field army headquarters, corps, and divisions of the field army, as required. Normally it is located at the field army aviation strip. If this

proves to be impractical or there are no Army airstrips in the vicinity of either the MIBARS or FATOC, then the platoon can be located at the most convenient Tactical Air Force reconnaissance strip.

(3) *Reproduction section.* The reproduction section receives negatives from the MIBARS detachments for the bulk reproduction of photography. Reproduced copies are delivered to the requester by aircraft or vehicle courier from the delivery platoon. The negatives are then stored by the library and reports section in order to satisfy requirements for additional prints.

(4) *Library and reports section.* The library and reports section maintains a library of reference materials, negatives, and publications. This section maintains files of reports for use by the MIBARS and other elements of the field army. The length of time imagery is retained will be established by the field army G2.

d. Administrative and Personnel Section. The administrative and personnel section accomplishes all administrative and personnel actions for the battalion, to include handling administrative messages and correspondence.

e. Supply Section. The supply section provides general supply and logistical support to the battalion, headquarters and headquarters company, and the detachments.

f. Maintenance Section. The maintenance section performs organizational maintenance on the battalion's wheel vehicles. This includes detachment wheel vehicles within the travel limitations caused by dispersion of the detachments to the separate AF reconnaissance airbases.

g. Company Headquarters Section. The company headquarters section performs the command, administrative, supply, and mess functions for the headquarters company.

h. Additional Reproduction Section. An additional reproduction section may be assigned to the battalion based upon an unusual requirement for photography. If the necessity arises, this augmentation could be provided to a separate task force or subordinate headquarters to support a specific operation or long-range requirement.

7-7. Military Intelligence Detachment, Air Reconnaissance Support

a. The military intelligence detachments usually are deployed with the squadrons of the supporting Tactical Air Force reconnaissance wing. There are four of these detachments in each MIBARS.

b. Occasions will arise when the Tactical Air Force reconnaissance wing will be augmented by an additional reconnaissance squadron. When this occurs, the battalion commander will form a provisional MIBARS detachment which will join the additional reconnaissance squadron. The detachment will be under the command of the imagery interpretation section leader and will be formed with personnel selected from the imagery interpretation, reproduction, administrative and personnel, and supply and maintenance sections.

c. The MIBARS detachment commander performs normal command functions to include providing close supervision over the preparation of imagery interpretation reports and the dissemination of these reports and their accompanying photography.

d. The detachment's ARLO normally is located with the Tactical Air Force reconnaissance squadron collocated at the airfield where the detachment is located.

e. Personnel of the imagery interpretation section normally work in close coordination with the imagery interpreters organic to the Tactical Air Force. When available, common work facilities may be utilized to facilitate handling and interpreting incoming imagery.

f. The detachment normally will receive one set of titled duplicate negatives and two sets of prints for each mission from the supporting reconnaissance squadron. The facilitate rapid interpretation, interpretation can be performed from the wet negative before the prints have actually been made. One of the two sets of prints is used for plotting while the other print is being interpreted. The imagery interpretation section normally confines its efforts to preparing hot and immediate imagery interpretation reports.

g. The reproduction section receives the negatives from the imagery interpretation section. Reproduction usually is limited to pro-

cessing current missions. Prints are packaged and made ready for pickup by the battalion's delivery platoon.

h. The detachment is attached for quarters and messing facilities to the Tactical Air Force unit with which it is collocated; however, command, administration, and operational control always remains with the battalion headquarters.

7–8. Communications

The current MIBARS operations net is discussed in chapter 6. The battalion headquarters also operates an internal wire net as shown in figure 7–2. Because of the wide dispersal required for individual MIBARS detachments, telephone communications between the detachments and battalion headquarters normally is not possible except through common communication service provided by the field army area communications system. A typical MIBARS detachment wire net is shown in figure 7–3.

Section III. PLANNING AND OPERATIONS

7–9. Planning

The planning effort of the MIBARS involves a number of considerations.

a. The priority of assignments and the overall workload of the MIBARS are directed by the field army G2 Air.

b. The speed and quality of work accomplished by image interpreters is directly related to the training, specialized area knowledge, and practical experience of the interpreters. Image interpreters require constant training and practice. Therefore, planning the imagery interpretation effort must take cognizance of the skill and experience of the interpreters and includes appropriate area training for these personnel, when possible.

c. Although the photo reproduction equipment is built to function under field conditions, the equipment has fragile components which can break down during prolonged operations or improper handling. Consideration must be given for alternate plans in the event of equipment breakdown. The reproduction personnel are trained specialists, but, as with image interpreters, their skill level is commensurate with training, practice and experience.

d. The deployment of the detachments normally is dictated by the dispersal of the supporting Tactical Air Force reconnaissance elements which may be located anywhere within the theater of operations. The operations of the delivery platoon is affected by detachment dispersal. In some instances, it may be necessary to place aircraft in direct support to a particular detachment due to the time and/or distance factors involved.

e. Weather conditions influence the planning and operations of the distribution effort. Because aerial distribution is largely dependent upon favorable weather conditions, alternate methods of distribution must be planned in the event of adverse flying conditions.

7–10. Operations

The MIBARS operational cycle normally is accomplished in the following steps:

a. An aerial reconnaissance requirement in the form of an air reconnaissance request is forwarded to the MIBARS operations and intelligence section from the field army G2 Air. On preplanned requests the full flying data may not be included because it may not always be available when the TACC accepts the mission requirement. On immediate requests, all flying data normally will be included. Upon receipt of either type request, events will occur in the following sequence:

(1) The duty team in the operations and intelligence section makes the appropriate entries on its mission status board (fig. 7–4).

(2) The operations and intelligence section notifies the appropriate MIBARS detachment of the request. Simultaneously, or as rapidly as possible, the delivery platoon is alerted to the requirement in order that proper flight planning can be accomplished.

(3) At the detachment, the commander alerts his ARLO of the pending mission. The ARLO posts his own mission status board, and prepares his briefing notes for the mission.

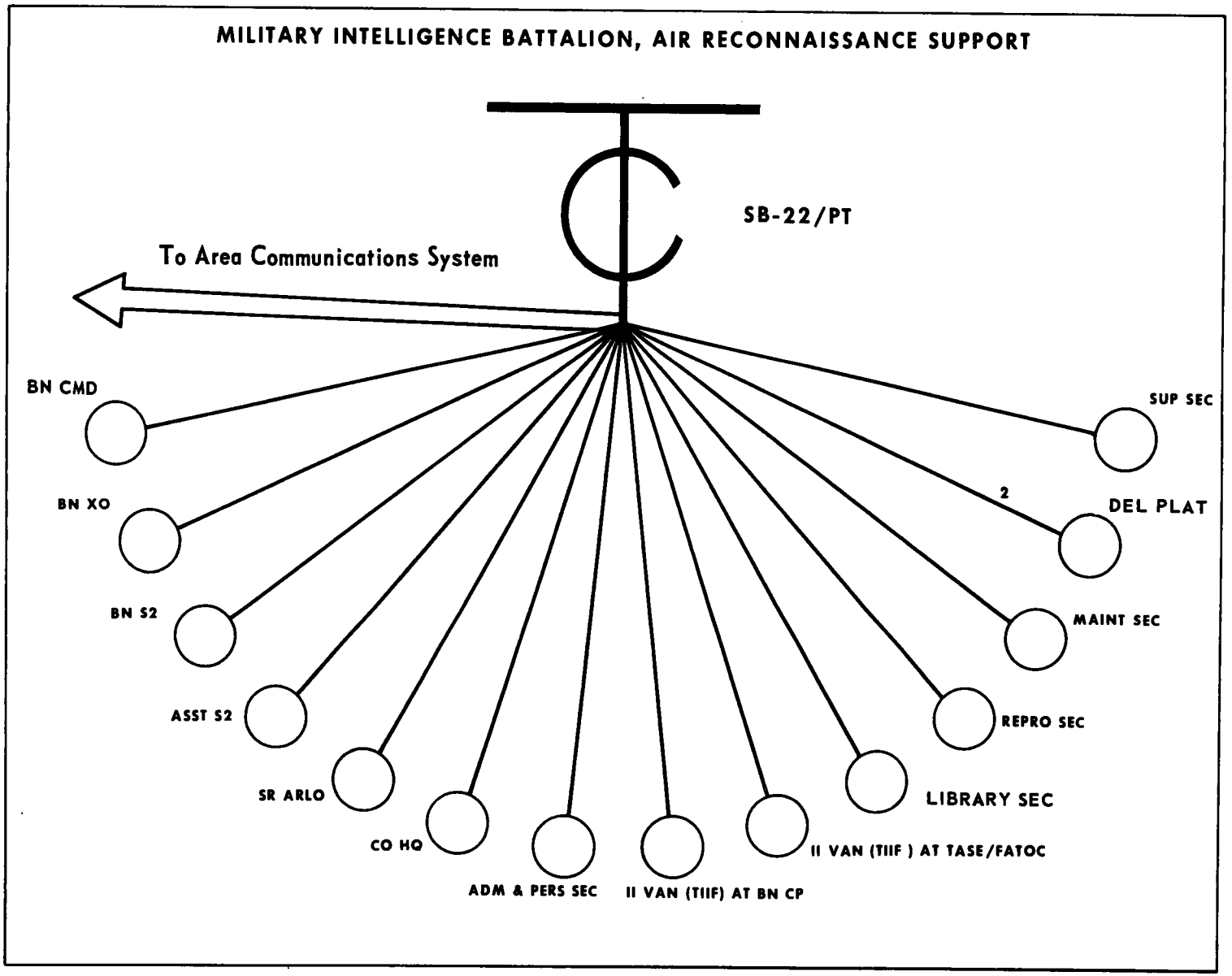


Figure 7-2. Battalion wire net.

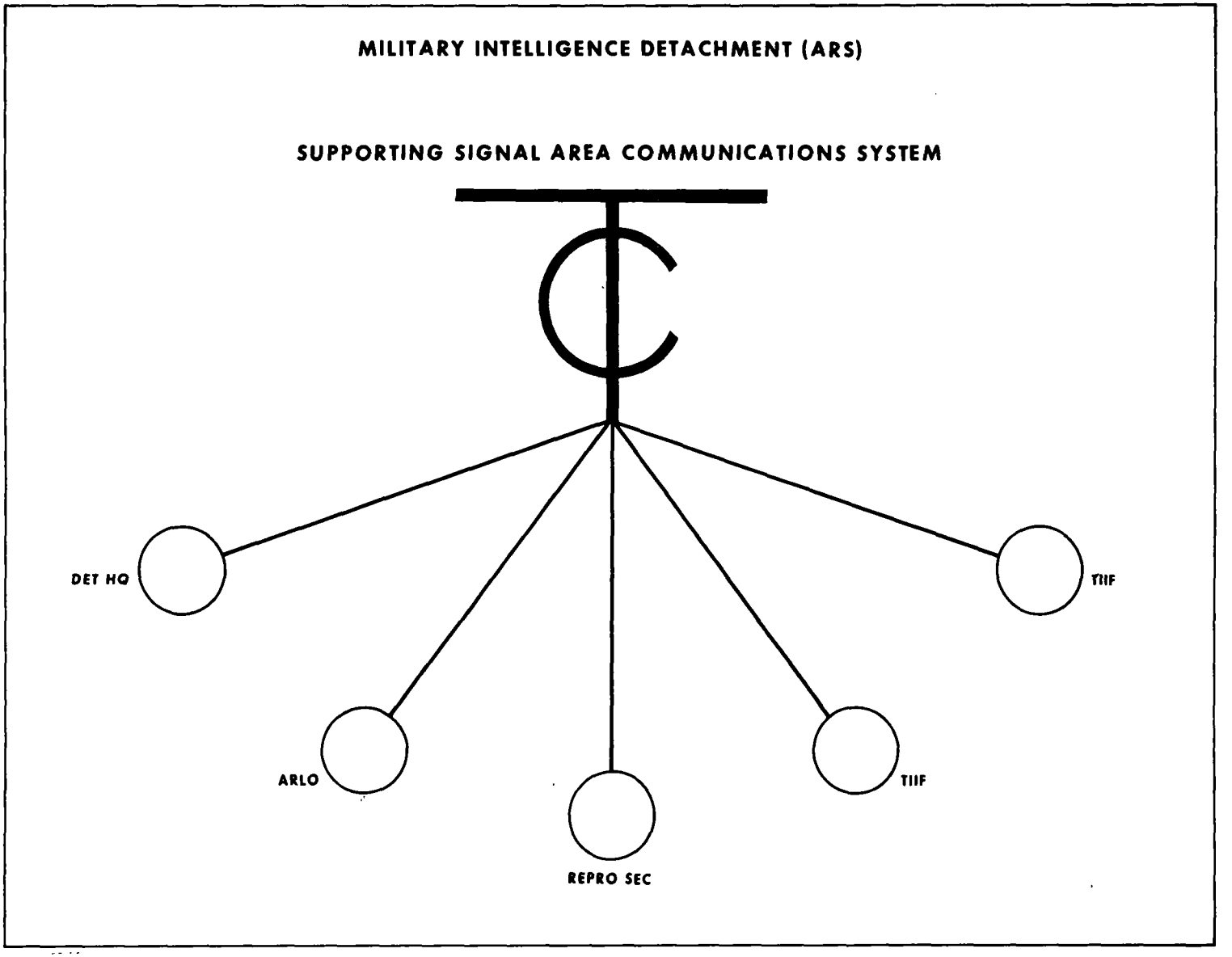


Figure 7–3. Detachment wire net.

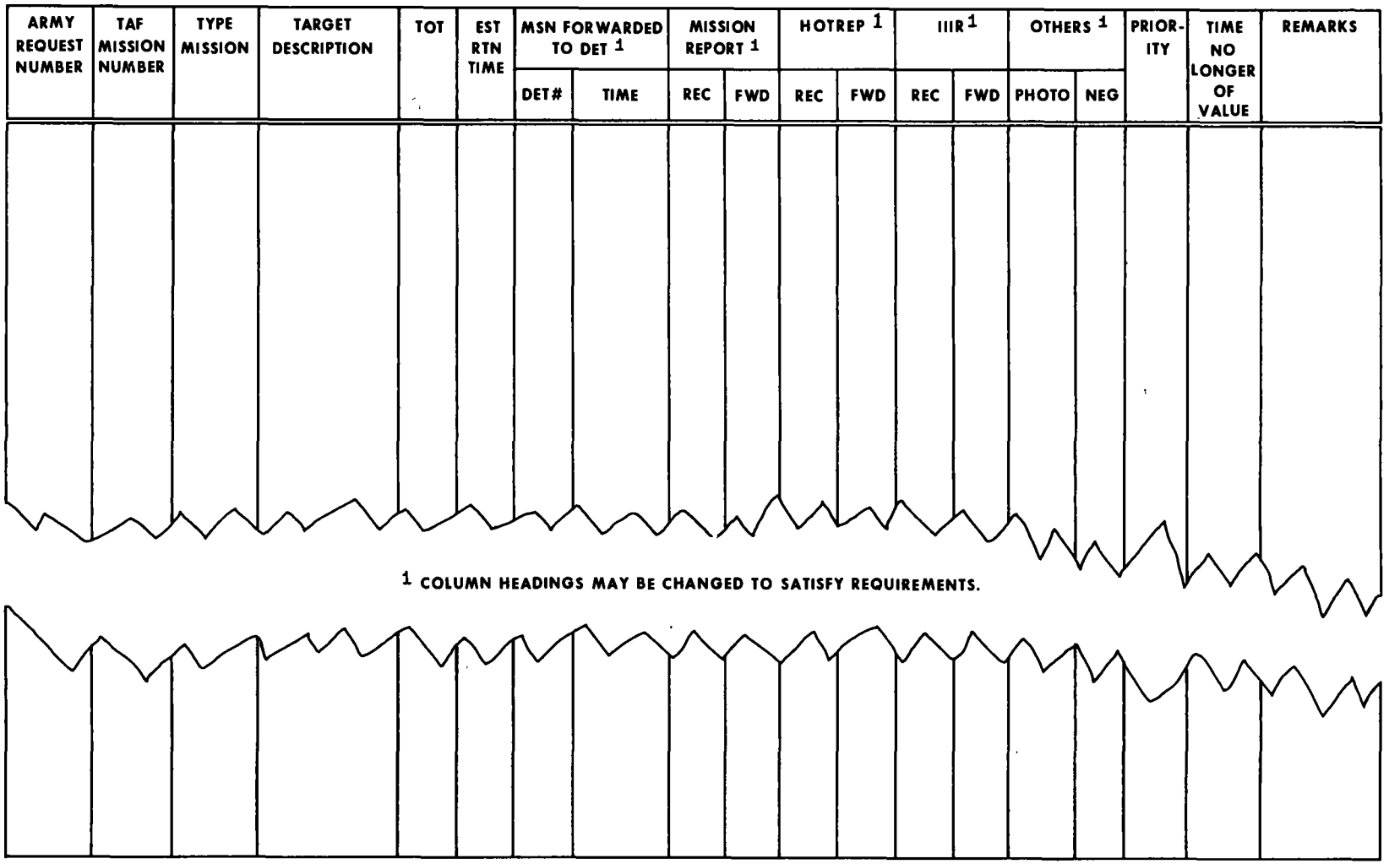


Figure 7–4. Mission status board.

After coordinating the briefing schedule with the reconnaissance squadron, the ARLO instructs the flying crew on the mission's requirements.

(4) The MIBARS detachment commander issues a "be-prepared order" to his imagery interpretation and reproduction sections in anticipation of the return of the mission aircraft.

(5) The imagery interpretation section posts the requirements on the section's mission status log (fig. 7–5).

(6) The reproduction section prepares the aerial photo reproduction request work order (fig. 7–6).

b. Upon completion of the mission—

(1) The ARLO accomplishes the debriefing of the Air Force flying crew and renders the mission report to the battalion operations and intelligence section.

(2) The Air Force photo processing unit develops the raw film imagery. As soon as a wet negative is prepared, it will be given a simultaneous rapid inspection by interpreters from both the Air Force and the MIBARS detachment. This initial check will be only for items to answer the specific EEI of the requester or to identify an item of clearly significant intelligence value. Upon completion of the initial check, the Air Force will produce an additional negative and two prints of the mission for the MIBARS detachment.

(3) Dependent upon the urgency and priority of the request, the imagery interpretation section may render a hot imagery interpretation report from the wet negatives which normally will be received before the prints. If this is not required, the imagery interpretation section will perform its immediate interpretation from the negatives and two prints provided.

(4) The imagery interpretation section prepares the necessary interpretation reports and furnishes the negatives of the mission to the reproduction section if the request includes a requirement to furnish prints. All reports and prints are dispatched as expeditiously as possible to the battalion operations and intelligence section. Reports normally are transmitted by radio while prints are picked up and delivered by the battalion delivery platoon.

c. The detachment commander coordinates the entire sequence of events in his detachment to insure proper responsiveness, continuity, and completion of assigned missions.

d. Mission reports and imagery interpretation reports are received at the battalion operations and intelligence section where they are immediately disseminated to the field army G2 Air, to the requester, and to other interested agencies as directed.

e. Detailed imagery interpretation reports normally are performed by the battalion imagery interpretation section while bulk reproduction requirements usually are accomplished by the battalion reproduction section. Detachments furnish mission negatives to the battalion operations and intelligence section which coordinates the completion of special interpretation and reproduction requirements.

f. Initial record and general intelligence record imagery normally are furnished to all tactical Army units having imagery interpretation support that can properly utilize the imagery. Coverage furnished is limited to a unit's area of interest with necessary overlap to insure complete coverage of the area between adjacent units. Reproduction of initial record and general intelligence record imagery is accomplished by the MIBARS headquarters which also stores the negatives for future requirements.

g. Cover traces are prepared by the detachments and are forwarded to the battalion where they are consolidated by the library and reports section. This becomes the master cover trace which is furnished to the G2 Air at field army, corps, and division. The master cover trace is kept current on a daily basis.

h. Operational requirements may require augmentation of the G2 Air duty teams with the TASE of the FATOC. Should it be necessary to eliminate the G2 Air duty team at the alternate FATOC in order to acquire additional duty personnel, the duties of the G2 Air team at the alternate FATOC can be assumed by the MIBARS operations and intelligence section as an additional duty. Communications equipment required by a G2 Air duty team at an alternate TASE already exists in the operations and intelligence section.

ARMY REQUEST NUMBER	TAF MISSION NUMBER	TYPE MISSION	TARGET DESCRIPTION	TOT	TIME NEG REC	RESULTS DESIRED	REPORTS REQUIRED	TIME RPT FWD		TIME NEGS TO REPRO	INTRP BY	PLOTTED BY	DIST. INST.	REMARKS
								HOT-REP	IIIR					

Figure 7–5. Imagery interpretation section mission status board.

AERIAL PHOTOGRAPH REPRODUCTION REQUEST WORK ORDER

CLASSIFICATION OF PHOTOGRAPHY _____ REQUESTING UNIT _____

WORK ORDER NUMBER _____ MISSION NUMBER _____

PRIORITY AND SUSPENCE _____ FRAMES _____ PRINTS _____

DEL INSTRUCTION _____

FOR USE OF IMAGERY INTERPRETATION SECTION

NEGATIVES RECEIVED, (TIME) _____ NEGATIVES CHECKED AND TITLED BY _____ (Init)

NEGATIVES TO REPRO, (TIME)

FOR USE OF REPRODUCTION SECTION

DEVELOPER (GALLONS) _____ TOTAL PRINT (9x9) _____ (9x18) _____

SHORT STOP (GALLONS) _____ TOTAL PAPER USED (FT) _____

STABILIZER (GALLONS) _____ TOTAL PACKAGES _____

PLOTS RECEIVED FROM II _____ TOTAL WEIGHT (LBS) _____

TIME SENT TO ARLO _____

_____

SIGNATURE

Figure 7–6. Aerial photography reproduction request work order.

CHAPTER 8
AVIATION AERIAL SURVEILLANCE COMPANY
STANAG 2029, 2208, 3189; SOLOG 34R; SEASTAG 2029, 2208

Section I. MISSION, ORGANIZATION, CAPABILITIES, AND LIMITATIONS

8–1. General
This chapter provides general guidance on the employment and capabilities of the aviation aerial surveillance company. It may be utilized as a reference for guidance on the employment of the aviation aerial surveillance company to include the mission, organization, equipment, capabilities, limitations, command and control, communications, planning, and employment.

8–2. Mission
The aviation aerial surveillance company provides combat surveillance, reconnaissance, and target acquisition capabilities to corps or division units through the use of organic aircraft, sensor equipment, and ground sensor terminals.

8–3. Organization
a. General. The aviation aerial surveillance company is assigned to corps and separate task forces, as required. The company is organized under TOE 1–128T (fig. 8–1). It is a semi-independent unit capable of performing near all-weather, day and night aerial surveillance and reconnaissance missions in support of the corps. The company must be satellited on a higher headquarters for administrative and logistical support. To achieve maximum effectiveness, this unit should be located at an airfield with instrument landing facilities. The commander of the supported unit has operational control of the aviation aerial surveillance company and exercises this control through the ACofS, G2, of the supported unit. The aviation aerial surveillance company is organized with a company headquarters, operations platoon, surveillance platoon, signal platoon, and a service platoon. The organization provides these functionalized sections to permit efficiency and flexibility of command and employment; however, the organization is not tailored to allow the detachment of separate elements for extended periods of time.

b. Company Headquarters. The company headquarters performs company administration, mess, supply, and organizational maintenance on wheeled vehicles on a continuous day and night basis.

c. Operations Platoon. The operations platoon is the focal point for scheduling, briefing, and debriefing of aviation aerial surveillance missions and for interpreting and reporting imagery information.

(1) *Operation platoon headquarters.* The platoon headquarters provides for continuous flight operations scheduling. Missions are received by the platoon headquarters and checked for completeness. Resources are analyzed and the missions subsequently passed to the surveillance platoon for execution. Flight plans are processed and monitored by the platoon headquarters.

(2) *Imagery interpretation section.*

(*a*) The image interpreters organic to the company should be located as close to the company processing facilities as possible to insure rapid pass of the imagery for interpretation. The specific duties of the imagery interpretation section include all duties listed in chapter 9.

(*b*) To perform their functions more effectively, the imagery interpretation section should receive intelligence summaries (INTSUM), with current situation overlay and significant order of battle, prisoner of war, and

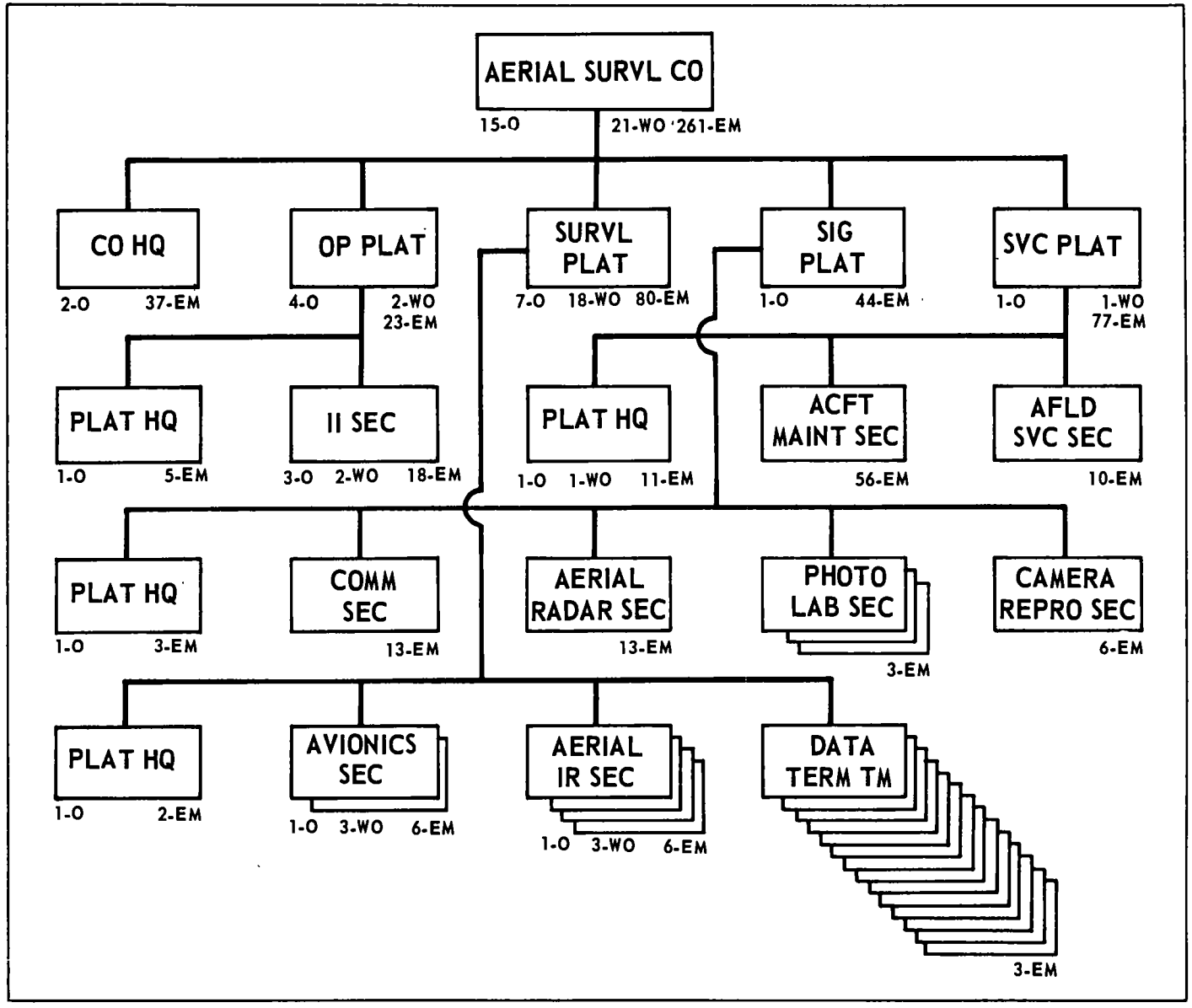


Figure 8–1. Organizational chart.

other intelligence reports from the supported unit intelligence officer on a continuous basis. These reports are used for updating of image interpreters on enemy situation and to maintain and update the situation map and the intelligence portion of the daily mission briefings.

(*c*) The section is organized to man two tactical imagery interpretation facilities (TIIF) in 12-hour shifts. Using the imagery acquired by the surveillance platoon and processed by the photo laboratory section, the imagery interpretation section will produce the reports described in chapter 9.

(*d*) Information acquired during interpretation is forwarded to the tasking agency and/or requesting unit by the fastest means available consistent with security classification of the contents and local SOP.

(*e*) Telephone and teletypewriter equipment is organic to the TIIF. Imagery reports requiring transmission by radio will be transmitted by the operations platoon headquarters to the requester.

d. Surveillance Platoon. The surveillance platoon consists of—

(1) *Surveillance platoon headquarters.* The surveillance platoon headquarters provides necessary personnel and ground equipment to establish a small operations section for the platoon.

(2) *Two aerial radar sections.* Each radar section consists of three SLAR surveillance aircraft plus operators.

(3) *Four aerial infrared sections.* Each infrared section consists of three IR reconnaissance aircraft plus operators.

(4) *Fourteen ground sensor terminal (GST) teams.* In order to provide near real-time readout of SLAR and IR imagery at subordinate headquarters, fourteen ground sensor terminal teams are provided. A GST team consists of a GST for SLAR imagery, a GST for IR imagery, and three airborne sensor equipment operators. Each terminal is mounted on its own vehicle chassis and includes a trailer mounted generator and a radio for operations within the company command net and communications with airborne aircraft.

(*a*) All GST receive electronic data input from their associated SLAR or IR sensor aircraft while the aircraft is inflight. This input to the GST is received in the form of a visual display and is also recorded on film to provide permanent record imagery for necessary interpretation. Additional discussion of these GST are contained in paragraph 4–9*c* and 4–9*d*.

(*b*) The GST teams are provided to support corps and its subordinate tactical elements. Normal employment is to place three teams in direct support of each division in the corps, three teams in direct support of the corps, and one team in direct support of each armored cavalry regiment and separate brigade in the corps. A ground sensor terminal team must work in close coordination with the tactical imagery interpretation facility (TIIF) which is provided to the corps and to the supported units by their attached military intelligence units.

e. Signal Platoon. The signal platoon consists of—

(1) *Platoon headquarters.* The platoon headquarters exercises supervisory control over the personnel and functions of the platoon.

(2) *Communications section.* The communications section provides the radio teletype teams that operate the company radio-teletypewriter sets which are part of the corps military intelligence unit operations net.

(3) *Avionics repair section.* The avionics repair section performs organizational maintenance on the avionics, SLAR, and infrared equipment organic to the surveillance aircraft.

(4) *Three photographic laboratory sections.* The three photographic laboratory sections normally are employed with the company imagery interpretation section to process exposed film for the company and produce photoprints as needed. They are responsible to print titling data on all missions. Appendix F prescribes the titling data to be placed on reconnaissance film. Each section is equipped with a photographic darkroom facility which provides rapid, continuous, and automatic processing of exposed film.

(5) *Camera repair section.* The camera repair section performs all organizational main-

tenance on the airborne photographic surveillance systems installed on the company mission aircraft.

f. Service Platoon. The service platoon consists of—

(1) *Service platform headquarters.* The service platoon headquarters is responsible for the employment of the aircraft maintenance and airfield service stations of the aviation aerial surveillance company.

(2) *Aircraft maintenance section.* This section performs normal organizational maintenance on the assigned airplanes.

(3) *Airfield service section.* The primary function of the airfield service section is to fuel and defuel assigned aircraft and effect forced entry and rescue from crashed aircraft.

8–4. Employment

The aviation aerial surveillance company normally will be assigned to and employed in general support of a corps or separate task force. Direct support to subordinate units will be performed on a mission basis. The company also may be assigned to a MAAG or Military Assistance Command to support U.S./host country stability operations. The company performs combat surveillance, reconnaissance, and target acquisition missions for the supported unit. The aviation aerial surveillance company is trained, equipped, and designed to provide the ground commander with current detailed intelligence information of his area of operations and enemy forces within that area. Normally, it will be employed as an integral unit at an instrumented airfield within the supported unit's area of operation.

8–5. Unit Capabilities

a. The aviation aerial surveillance company has the following capabilities:

(1) Provide sustained near all-weather, day or night aerial surveillance of a corps area of influence.

(2) Conduct aerial reconnaissance of routes, zones, and areas using visual, photographic, SLAR, and infrared systems.

(3) Transmit the imagery produced by its SLAR and IR systems to various headquarters in near real time through its ground sensor terminals.

(4) Process and interpret the imagery produced by sensor systems and disseminate the information obtained from this imagery and from visual observation.

(5) Acquire target acquisition information through the use of the above systems.

(6) Acquire information for post-strike analysis of nuclear weapons effects.

(7) Acquire information for CBR surveys using aerial means.

b. Personnel of this organization can engage in effective, coordinated defense of the unit's installation. The unit is one hundred percent mobile by utilizing its air and ground vehicles.

8–6. Unit Limitations

a. The aviation aerial surveillance company must be deployed at an airfield which has instrument approach facilities, or it must be augmented with personnel and equipment to provide this capability.

b. The utilization on the ground sensor terminals is limited by the requirement for line of sight between the sensor stations and the aircraft conducting a mission. The reproduction in II support for the fourteen GST must be furnished by the supported unit.

c. The company has no organic aircraft for command, control, and liaison functions with its detached ground sensor terminals or with other organizations within the corps area. It has limited aerial delivery capability for imagery interpretation reports and hard copy photography to the requesting units. Normally, other aircraft are made available to the company for these functions.

d. The company is dependent upon its parent headquarters for personnel and administrative services.

Section II. COMMAND, CONTROL, AND COMMUNICATIONS

8–7. General

To prevent dissipation of the company's capabilities, definite lines of command and control must be established and maintained.

8–8. Command

a. Command channels for normal unit administrative, logistical, and maintenance requirements are through the company's parent

organization. Training is the responsibility of the company commander with general guidance provided by both the parent organization and the G2 through his principal assistant, the G2 Air.

b. The company can perform normal organizational level maintenance. Direct and general support maintenance will be provided by maintenance units of the corps support brigade as described in FM 29–22.

8–9. Control

The aviation aerial surveillance company is under the staff supervision of the corps G2 Air. The G2 Air coordinates and integrates the activities of the company with other means of accomplishing aerial surveillance and reconnaissance available to, or in support of, the corps. He directs the company's surveillance effort through the assignment of specific missions and priorities for accomplishment. A G2 Air representative is provided to the company to conduct briefings of the aircrews on mission requirements and debriefings of the crews upon their return. The information obtained is passed to the G2 Air and to requesting headquarters.

8–10. Communications

a. General. Telephone is the normal means of communication within the company area. FM voice radio provides communications between company elements when moving, with higher or supported headquarters, and with mission aircraft for control and coordination of data transmission. UHF voice radio is used for air traffic control. Radio teletype is used to communicate between the company, the parent headquarters, and the corps G2. When possible, the company enters the corps command or Army area multichannel communications systems.

b. Wire. Telephones are provided to each platoon and subordinate sections or elements requiring communications in the company wire net (fig. 8–2). The operations platoon headquarters has been provided an additional telephone (not shown on the wire net diagram) for direct communications with the air traffic control element. One teletypewriter and necessary associated terminal equipment is mounted in the company operations van for teletype communications. Wire is provided to install the company wire net, perimeter security net, and trunk lines to the area communications system by the nearest area signal center.

c. Radio. Radio equipment is provided to meet the minimum requirements of the company. Equipment for remote control operations of radio sets has been included where required. Radio equipment in the company is indicated in the radio diagram (fig. 8–3).

Section III. PLANNING

8–11. General

Aerial surveillance and reconnaissance planning is accomplished as discussed in chapter 5. At the corps, planning will integrate the capabilities of the aviation aerial surveillance company with the capabilities of the aerial surveillance and reconnaissance elements of the other services.

8–12. Mission Assignment

The corps G2 Air determination of whether a mission will be assigned to the aviation aerial surveillance company, accomplished by other Army aircraft, or by other service support will depend on the following factors:

a. The current operational capability of the aviation aerial surveillance company to perform the mission.

b. The time when the requested information will no longer be of value.

c. The capability of enemy air, air defense, and other countermeasures to prevent organic aircraft from completing their missions.

d. The distance, weather, and terrain between the flying elements and the target area.

8–13. Concept of Employment

Specific company missions normally are categorized as surveillance or reconnaissance. A mission may employ more than one of the sensors organic to the surveillance aircraft. During the mission, the aircraft may change in-

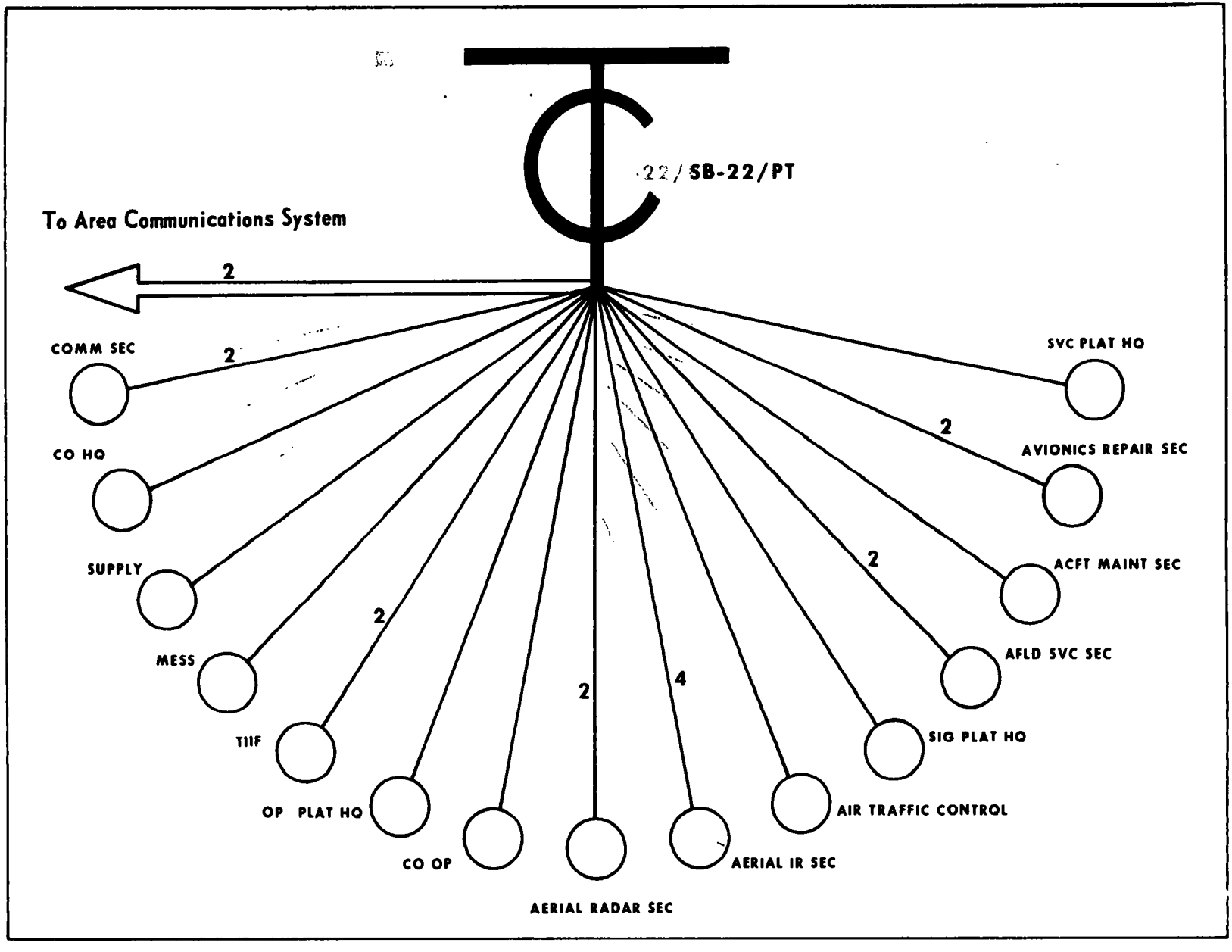


Figure 8-2. Aviation Aerial surveillance company wire net.

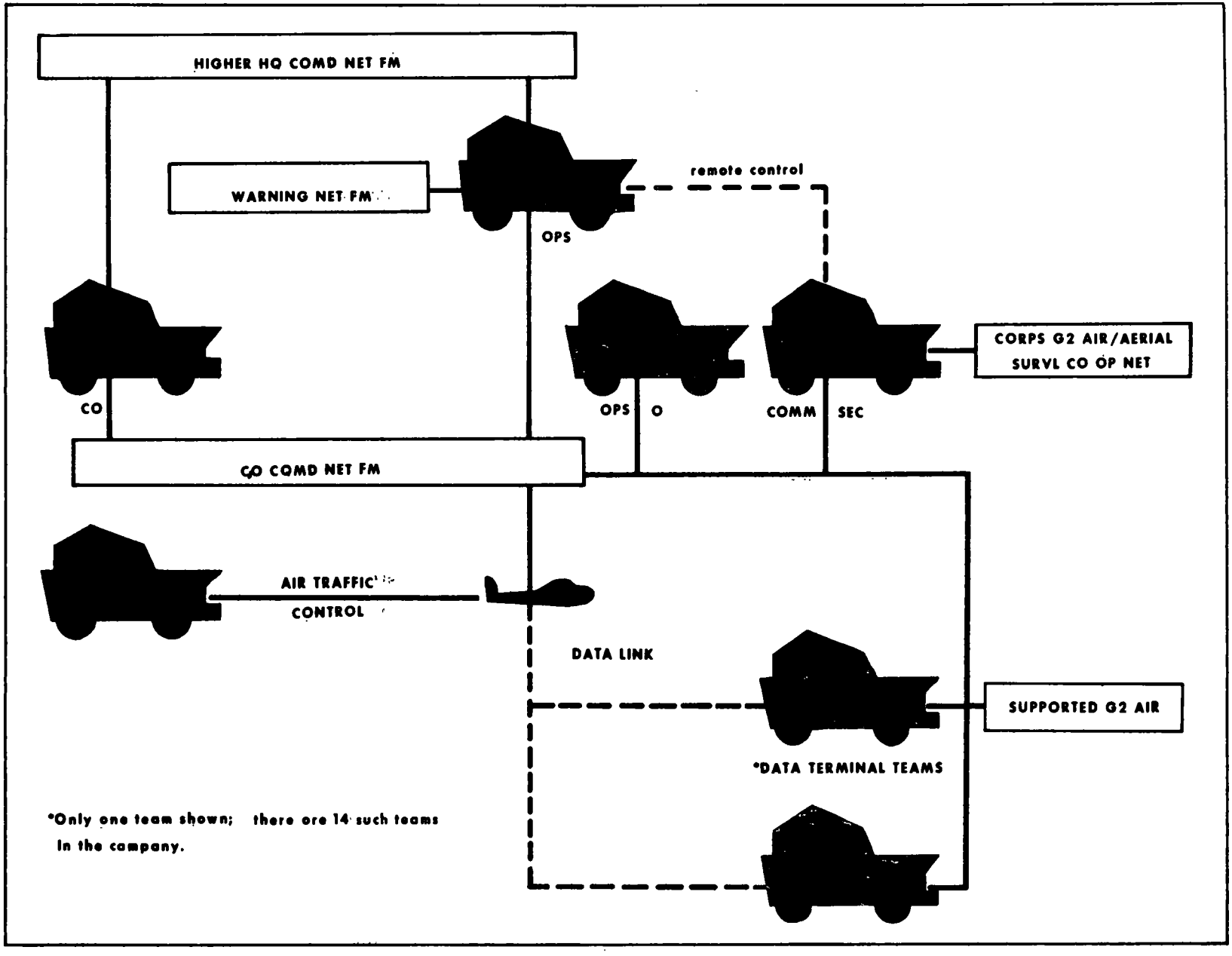


Figure 8–3. Type radio net.

flight to another type mission, or it may perform a multiple-type mission concurrently.

a. The operations of the aviation aerial surveillance company are characterized by rapid response to mission requirements. This is accomplished by—

(1) Mission type tasking of the unit to permit maximum flexibility and utilization of resources in obtaining the desired information.

(2) A capability for rapid response by diversion to other missions in flight, based on changes in the tactical situation, the units supported, or the mission objectives.

(3) Reliable and secure communications with the G2 Air and the GST.

(4) Flexibility of mission performance afforded by multiplicity of performance capabilities inherent in the aircraft and in the surveillance systems.

(5) Acquisition of knowledge of the enemy situation and capabilities by frequent coverage of the same operational areas.

b. In planning the employment of the company's surveillance aircraft, the following must be considered:

(1) Availability of flying crews, aircraft, and sensors, to include previously established priorities and equipment maintenance.

(2) Enemy air defense capability and locations of enemy units.

(3) Existing and forecasted weather conditions at the airfield, as well as en route to, and at, the target area.

(4) Specific results desired; i.e., the type of information the requester wishes to obtain.

(5) Operational altitude of the equipment in regard to terrain configurations en route to, or in the target area.

(6) Aircraft density in the target area and control of air traffic.

(7) Friendly tactical situation and supporting fires in the target area.

(8) Tactical air support plan.

(9) Existing authentication and identification systems.

(10) Selection of designated landing fields to facilitate direct coordination with supported units. This will include alternate airfields, when required.

(11) Escape and evasion information.

(12) Aircraft abandonment area.

(13) Technical proficiency of pilot, observer, and ground sensor terminal equipment operators.

(14) Imagery processing, interpretation, reporting, and print delivery requirements and capabilities.

(15) Coordination with Army Security Agency operations.

8–14. Briefing and Debriefing

a. General. The aviation aerial surveillance company will be tasked to execute missions involving flight over any or all portions of a corps area of influence. The aircraft crews and company support personnel must be completely familiar with the mission to be flown, must adequately plan and prepare for the mission, and must use prescribed methods of reporting mission data.

b. Briefing and Debriefing of Aircraft Crews. This subject is discussed in detail in chapter 10.

c. Mission Support Personnel Briefing. The company support personnel who will be involved in the conduct of a mission and the processing of mission results also require briefing. Imagery interpretation personnel normally will assist the flying crew in planning the mission and thus are briefed during the planning stage on the information they will need to accomplish the necessary interpretation. The photolab personnel must be briefed on the requirements of each mission, the anticipated processing requirements, and the deadline for completion of the processing. The ground sensor terminal teams must be alerted to the mission through company communications or by the G2 Air of the headquarters to which they are attached. They will require information on the mission in order to monitor the flight and produce imagery at their stations.

d. Sensor Data Log and Flight Log. A sensor data log and flight log (pilot's trace) are maintained for each sensor mission flown. These are reviewed for completeness during debriefing. It is desirable that the aircrew be present with the image interpreters during the initial readout of the imagery obtained on the mission.

8-15. In-Flight Reports

To provide commanders and staffs with critical information during the conduct of the mission, the aircrew must be able to make in-flight reports to the requesting unit and other interested elements by means of radio, message drop, or prearranged signals. In-flight reports usually will be rendered during each mission, unless the tactical situation warrants radio silence. Composition and format for in-flight reports are discussed in chapter 10.

Section IV. TECHNIQUES OF AERIAL SURVEILLANCE AND RECONNAISSANCE OPERATIONS

8-16. Visual/Photographic Missions

Aerial visual/photographic missions are discussed jointly as aerial camera systems are organic to all surveillance aircraft in the aviation aerial surveillance company. Significant visual sightings normally will be confirmed by photography.

a. The purpose of visual/photographic and surveillance reconnaissance is to obtain information of the enemy and the terrain and to detect targets. Some of the factors influencing these missions are weather, visibility, altitude, speed of observation, type of aircraft, terrain conditions, type of camera employed, hostile ground fire, and proficiency of the pilot-observer team.

b. Visual and surveillance reconnaissance missions are conducted at an appropriate altitude to permit accurate observation of the area of interest. Usually the aircraft will fly at an altitude of 1,000 to 1,500 feet above the ground; however, the specific area of interest may require low-level observation at nap-of-the-earth altitudes. If low-level observation is required, the aircraft should make one pass over the area utilizing any natural terrain features to conceal the approach of the aircraft. If additional passes over the target area are required, they should be made from random directions.

c. Visual/photographic surveillance missions may be accomplished by employing flight teams of two aircraft. This method of employment permits the two aircraft to mutually support each other in their visual observation techniques. One aircraft can perform a photographic mission while the other aircraft maintains visual observation over the area of interest. In case an aircraft is downed by ground fire, the flight team method of employment facilitates rapid recovery of the aircrew.

d. The surveillance aircraft are equipped with a photographic surveillance system employing aerial cameras that can be positioned in flight to provide vertical (with 20% to 80% forward overlap) or side oblique (15° to 30° depression angle) photographs of the terrain. Some surveillance aircraft are equipped with a fixed-mounted nose camera that provides forward panoramic, horizon-to-horizon photography specifically designed to be taken from low-flying aircraft. This camera takes forward oblique photographs of the ground from forward of the aircraft position out to the apparent horizon with a 180° coverage forward.

e. Visual aerial surveillance with confirmatory photography becomes especially valuable when the aircrew is familiar with the terrain in the target area. Whenever possible, crews should operate over the same area repeatedly to allow them to become completely familiar with the area so they can recognize and identify changes that take place. In the conduct of repetitive aerial surveillance over areas of interest, however, care must be taken to insure that future tactical operations scheduled for these areas are not compromised by an excessive number of missions over the same location.

f. Techniques used in the accomplishment of visual/photographic missions vary with the tactical situation, enemy strength and disposition, weather and terrain, and are limited only by the imagination of the pilot-observer team. Techniques considered appropriate for the accomplishment of visual/photographic missions are described in (1) through (4) below.

(1) Reconnaissance of a point target may

be accomplished by a flight team of two aircraft. The aircraft approach the target area in a loose echelon formation so positioned that the target area is on the observer's side of the aircraft. Altitude usually will be 1,000 to 1,500 feet above the terrain during the initial observation; if a close reconnaissance of the target is required, the aircraft will fly past the target and then make a descending turn and execute a low-level, high-speed pass over the target area from a different direction (fig. 8–4). If photographs are required, one aircraft will overfly the target at the appropriate photo altitude.

(2) The offset technique can be employed frequently when a single low pass over a target can accomplish the mission (fig. 8–5). The aircraft approach the target at an altitude of 1,000 to 1,500 feet, and as soon as the target is located in the distance, the aircraft turn away from the target and descend toward a readily identifiable initial point (IP). The route from the IP to the target will be made at nap-of-the-earth altitudes, virtually insuring surprise in the target area.

(3) Route reconnaissance of a railroad, highway, or waterway can best be accomplished by a flight team of two aircraft. The aircraft fly in a loose echelon formation at an altitude sufficient to clear terrain obstacles, each aircraft positioning itself over opposite sides of the route to be surveyed (fig. 8–6). This permits observation across the route and under any foliage that might conceal the periphery of the route.

(4) Aerial cameras organic to the surveillance aircraft have a limited area coverage capability and should be employed only for small target area coverage. The requesting unit should furnish their G2 Air accurate six-digit coordinates of the four corner points of the area from a 1:50,000 tactical map. Upon receipt of these coordinates, the aviation unit can plot the flight traces considering all the factors affecting the mission. Using the doppler navigation system and the aircraft's autopilot, accurate parallel flight paths can be flown to produce the required imagery.

8–17. Airborne Radar Missions

a. Some surveillance aircraft of the aerial surveillance company are also equipped with a side looking airborne radar (SLAR) system. A detailed discussion of SLAR sensor capabilities is contained in paragraph 4–9*d*.

b. Generally SLAR is employed for a large area coverage as in an area search mission or in surveillance of linear distances such as traffic arteries, coastlines, and international boundaries. During the conduct of SLAR missions, it is essential that the aircraft be flown in a straight and level altitude. Air turbulence will degrade the quality of the imagery produced. All missions should be flown at the optimum flight altitude for the recording of SLAR imagery.

c. The following are examples of typical SLAR missions:

(1) *Area search.* Flight paths are planned to insure that the target area is continuously being mapped by the SLAR. This can be accomplished by using either a triangular or rectangular pattern as illustrated in figure 8–7.

(2) *Coastal or border surveillance.* This mission is executed by flying a course parallel to, and at a standoff distance from, the area of interest. Standoff distances can be varied up to 60 kilometers from the flight path in increments of 10 kilometers. Throughout the conduct of these missions, in-flight spot reports can be based on target readout from the in-flight processor in the aircraft. Examples of typical SLAR missions are shown in figure 8–8.

8–18. Airborne Infrared Missions

a. Additional surveillance aircraft of the aerial surveillance company are equipped with the infrared (IR) set. A detailed discussion of IR sensors is contained in paragraph 4–9*c*.

b. The aerial infrared sensor generally is employed to provide air-to-ground infrared coverage of routes, small areas, and suspected enemy locations or installations. The IR system has a day and night as well as a limited poor weather capability, but will not record heat emissions through thick cloud layers, dense jungle canopies, or other similar heat absorbing environments. IR missions usually are executed during the hours of darkness as the natural cooling of the ground permits a larger heat emission differential between "hot" ob-

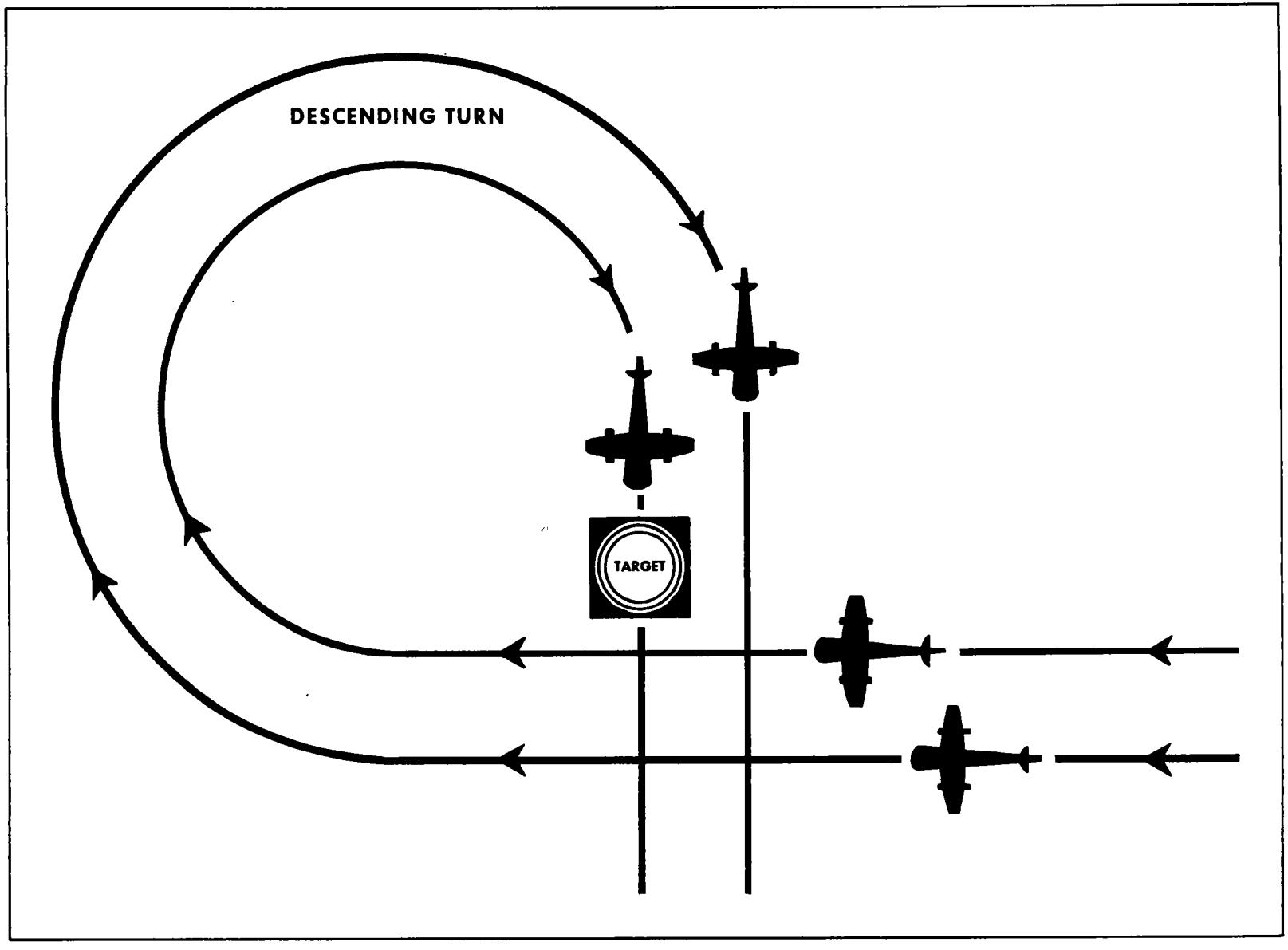


Figure 8–4. Visual/photo point target reconnaissance.

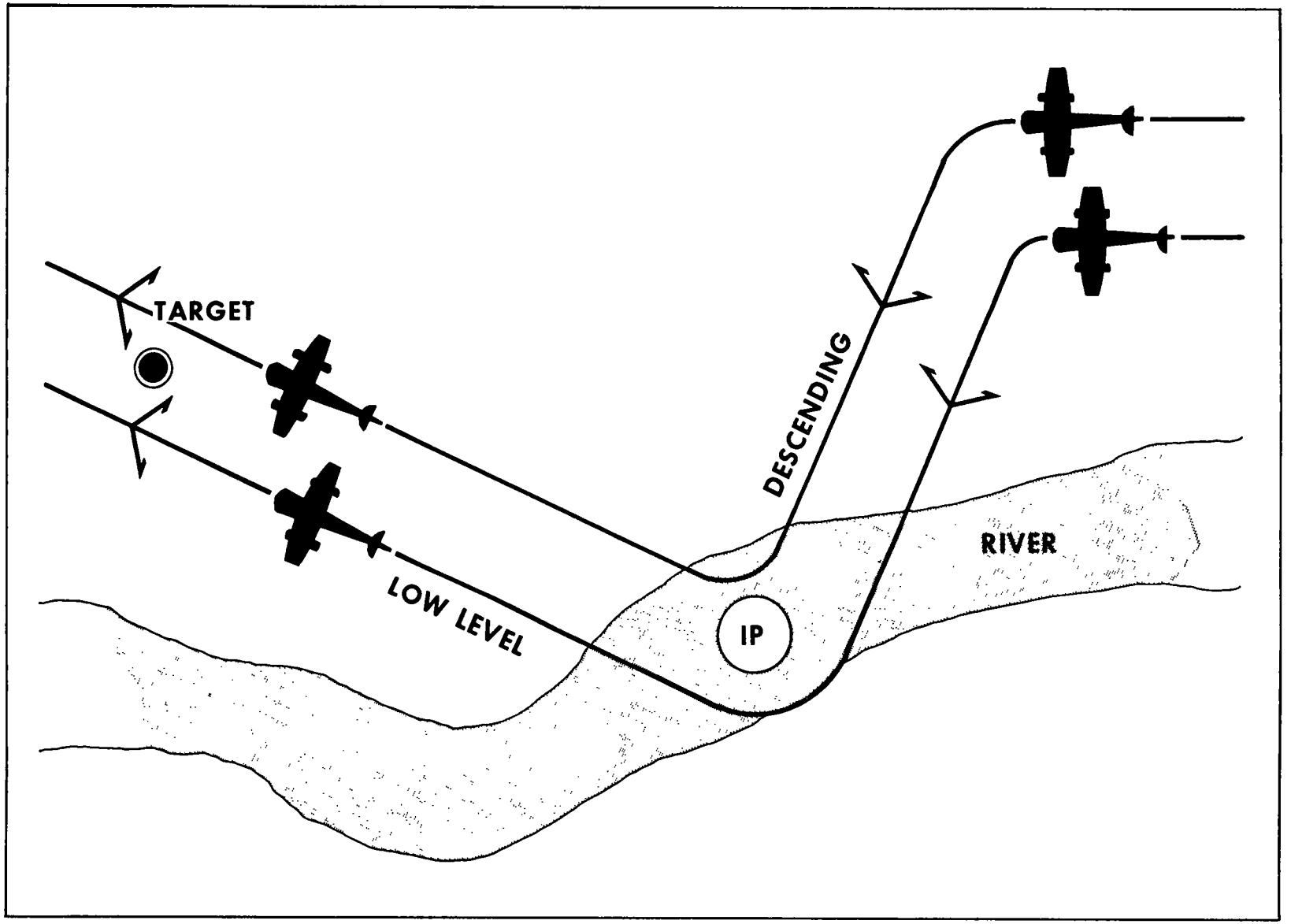


Figure 8–5. Visual/photo offset technique.

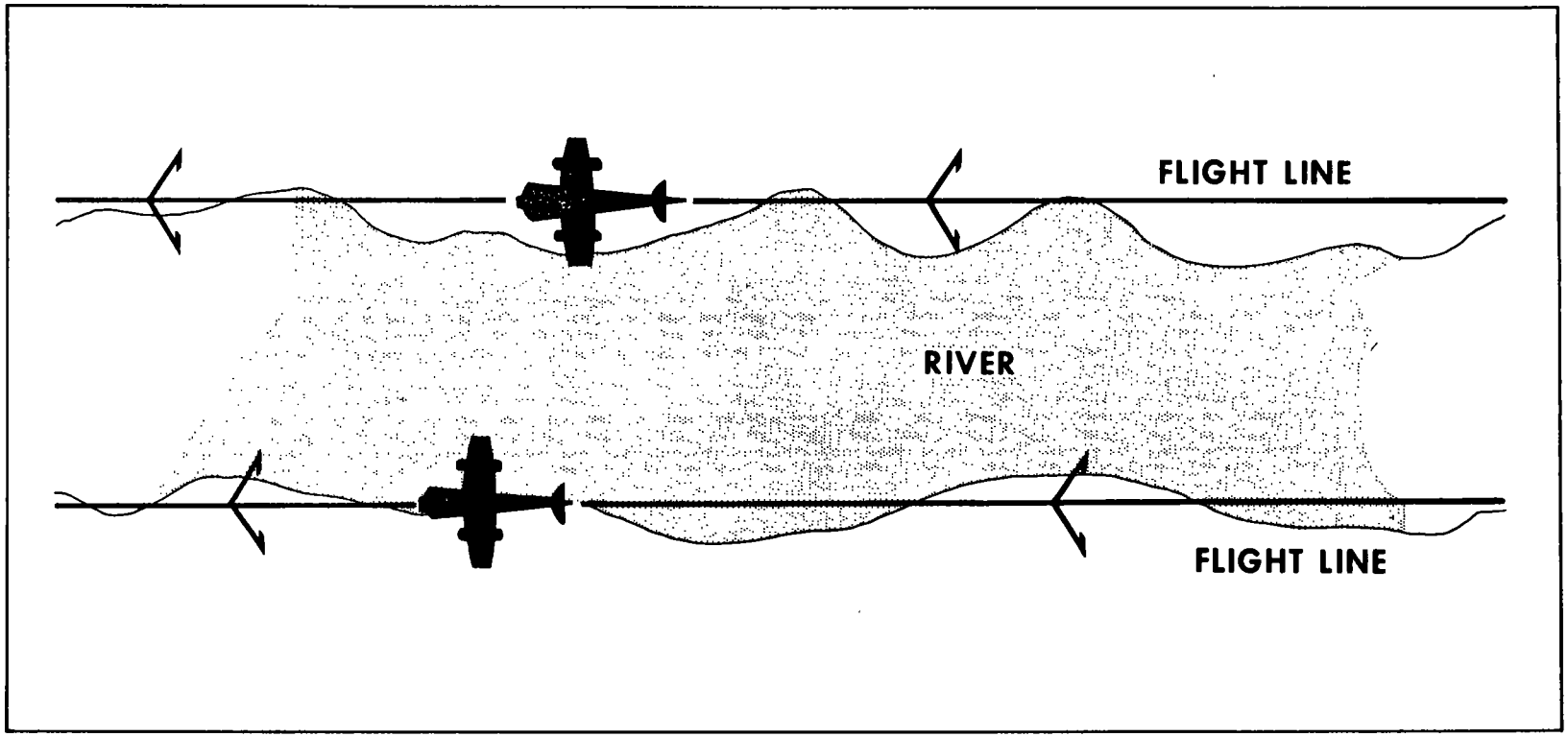


Figure 8–6. Visual/photo route reconnaissance.

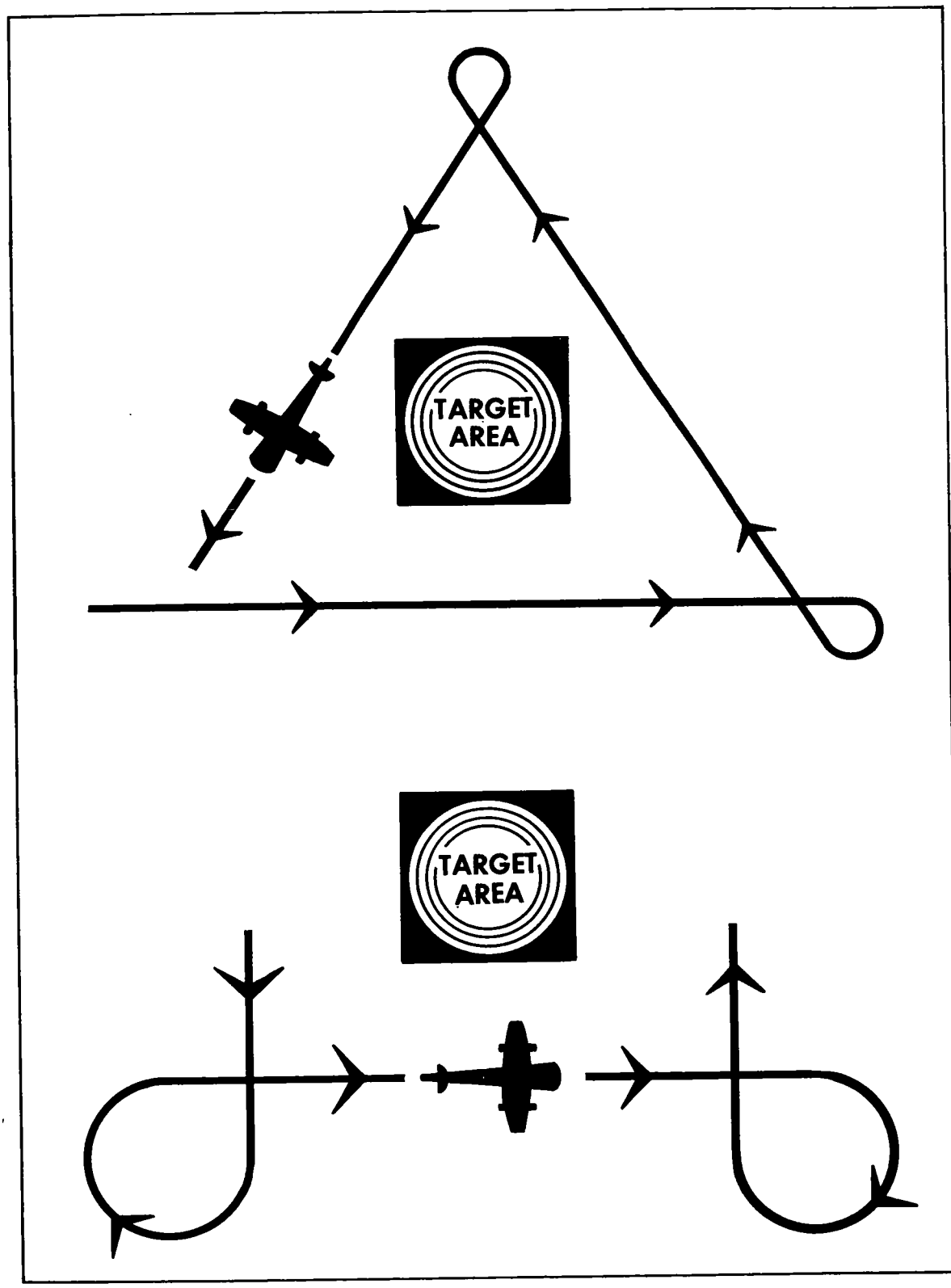


Figure 8–7. SLAR area search.

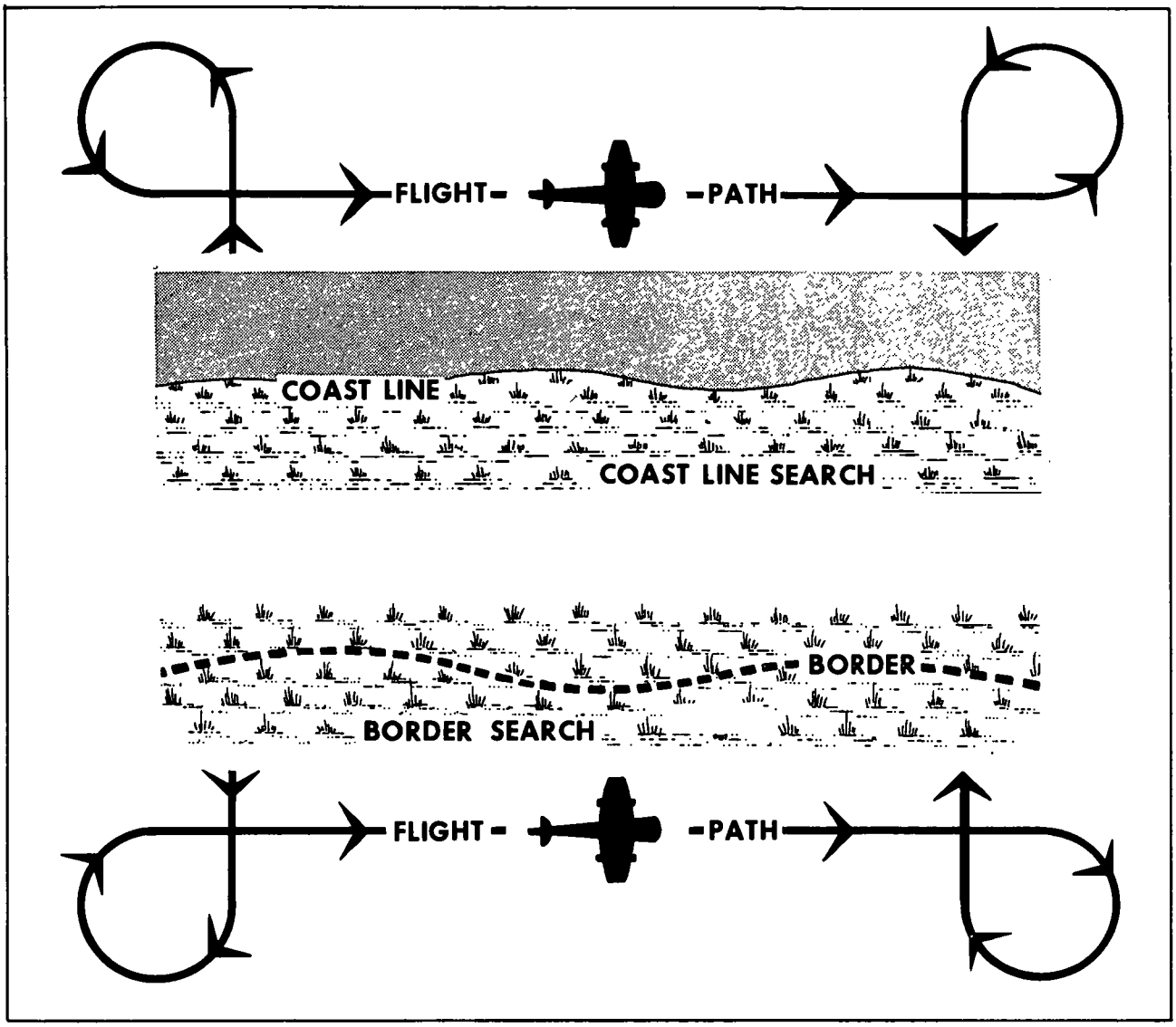


Figure 8–8. SLAR linear coverage.

jects on the ground and the surrounding terrain.

c. The success of night infrared missions is contingent upon accurate navigation to the target area. Consequently, flight planning prior to an infrared mission must be accurate, detailed, and complete. Optimum results from night infrared missions can be achieved by using the doppler navigational system. The coordinates of a readily identifiable terrain feature or man-made feature in proximity to the target area is essential for updating of the doppler navigational computer just prior to the imagery run. Utilizing the doppler navigational computer, the pilot can execute the infrared mission by employing parallel passes over an area; or random passes to minimize his exposure to ground fire.

8–19. Multiple Sensor Operations

The surveillance and reconnaissance resources within the aviation aerial surveillance company can be most efficiently employed if the unit is multisensor tasked. This permits primary and secondary sensors to be incorpo-

rated in the mission requirements where feasible to permit target coverage by the secondary sensors should target conditions preclude use of the selected primary sensors. Thus the G2 Air representative at the company, image interpretation personnel, and the operations officer of the company will be able to plan jointly the exploitation of the most efficient combination of sensors to accomplish the mission within the required time frame.

8-20. Method of Describing Ground Locations, Areas, and Boundaries

It is essential that all imagery be correctly referenced. In order to negate errors and confusion, a standard method of describing ground locations, areas and boundaries has been established. This standard method has been agreed to by all NATO nations.

a. Use of Maps. In order to avoid confusion in the designation of place names when there are various editions of a map relating to the same area, the following will be shown at the top of the document:

(1) Map Series Number (and country or geographic area, if required).

(2) Sheet Number (and name, if required).

(3) Edition.

(4) Scale (if required).

Example: This information can be shown as follows:

Map Series Number	M 501 EUROPE
Sheet	NM 32-1 (ESSEN)
Edition	1-DMG
Scale	1:250,000

b. Security. The location of headquarters, units, depots, and other installations will only be mentioned in a communication or document if this communication or document can be transmitted to the addressee by a method insuring the appropriate security. Location of headquarters, units, depots, and other installations will not be included in addresses unless necessary to insure correct delivery.

c. Names of Places.

(1) Names of places will be written in block capitals exactly as spelled on the maps in use. The addition of a grid reference normally will be necessary. In this case, six figure grid references must not be used when four figures are sufficient. In certain areas for which mapping material does not allow the use of coordinates, latitude designations will be used instead.

(2) When a grid reference code is used, the names of places which it indicates must not be shown in clear in the same message.

d. Locations and Points on the Ground.

(1) Locations and points on the ground may be described either:

(*a*) By grid coordinates, or;

(*b*) By giving the distance and direction from a simple reference point; e.g., "Cross-roads 1000 yards (or 1000 meters) Southwest of church tower of NAPERVILLE (Square 6235)."

(2) In written orders and reports, grid coordinates will always be used the first time the designation of a point or location is given. Thereafter, coordinates will be given only when such repetition insures greater clarity.

e. Directions. A direction can be indicated either by two points or by angular measurement reading clockwise from a reference direction. In the latter case, directions will be given as from true, magnetic, or grid north and the type used will always be specified. The unit of angular measurement used, i.e., mils or degrees normally are specified, but may be omitted when there is no probability of misunderstanding.

f. Roads, Tracks, and Railways.

(1) Roads, tracks, and railways will be described by the names of places to make sure that the right road can be identified. The word "road," "track," or "railway" will precede, not follow, the place names; e.g., "road LAPRAIRIE-DELSON," NOT "LAPRAIRIE-DELSON road."

(2) When movement is involved, the route will be designated by a sequence of points on the route named in the direction of movement. When no movement is involved, the sequence of points named will be from left to right or rear to front, assuming that the person designating the route is facing the enemy. Cardinal points may be added, if required.

g. Boundaries.

(1) Boundaries will be designated by easily distinguishable terrain features in the sequence in which they occur on the ground. They will be described from rear to front during an advance, and from front to rear in defense and withdrawal. If generally parallel to the front e.g., rear boundaries, they will be described from left to right, facing the enemy. Cardinal points may be added, if required.

(2) When describing boundaries between units and formations, the words "inclusive" or "exclusive" will be used. These words should be used before the place to which they refer. The description of a boundary will state specifically to which unit or formation an area or a point in inclusive or exclusive.

h. River Bank. River banks are described as right or left from the point of view of an observer facing downstream, or if this cannot be done, by using cardinal points.

i. Areas. An area normally will be described by taking the northernmost point first and giving the remaining points in clockwise order.

j. Positions. Positions will be described from left to right and front to rear facing the enemy. To avoid confusion, cardinal points may be used to describe flanks, rather than "right" or "left."

CHAPTER 9

IMAGERY INTERPRETATION

STANAG 2102, 3377

Section I. GENERAL

9–1. Image Interpreters

Image interpreters are intelligence specialists trained in the techniques of extracting information from imagery produced by airborne sensors. The image interpreter must know the intelligence requirements of the command in order to quickly identify, locate, and report information obtained from the imagery. Interpreters generally are employed as a group. Normally they are located so as to have immediate access to the film processing facilities serving the various units employing airborne sensors. This assures the availability of adequate interpretation effort at all times, the elimination of administrative dead time in transmitting imagery, and the economical use of processing and interpretation equipment.

9–2. Duties

The specific duties of image interpreters include the following:

a. Interpreting imagery and reporting intelligence information regarding the enemy—his operations and activities, disposition, supplies, communications, and installations—and civilian activity related to military operations such as population concentrations, industrial production concentrations, industrial production facilities, and traffic networks.

b. Analyzing terrain.

c. Evaluating targets for attack by all available weapons systems; preparing target folders and performing damage assessments.

d. Updating maps from current imagery; preparing map supplements from photography.

e. Preparing mosaics, panoramics, and terrain models for operations.

f. Assisting the G2 Air in planning aerial reconnaissance and surveillance missions.

9–3. Effectiveness

The effectiveness of an image interpreter is increased by his experience and the amount of background knowledge he possesses about the enemy and the area of operations. The interpreter's time and effort are also more effectively expended when he is made aware of exactly what information is requested or desired. Effectiveness is enhanced when the interpreter has available to him—

a. Area studies, other background material, and selected intelligence reports that deal with the enemy and the area of operations.

b. Operation orders, commander's EEI, and OIR that identify intelligence requirements and the area of interest.

c. Knowledge of the capabilities and limitations of the supporting aircraft and sensors, and the interpretation equipment available to him.

d. Knowledge of current enemy tactics, equipment, and order of battle.

e. Prior imagery of the area of interest for comparative analysis.

f. Intelligence information received from other sources that will assist in confirming or denying his suspicions.

9–4. Imagery Interpretation Support

a. Field Army. In addition to the imagery interpretation support furnished by the Military Intelligence battalion, Air Reconnaissance support, field army, the Military Intelligence battalion, field army (TOE 30–25) provides an imagery interpretation section to the field army

G2 Air. The primary mission of this section is to support field army operational planning and targeting.

b. Corps. The Corps Military Intelligence Detachment (TOE 30–18) provides an imagery interpretation section to the corps G2 Air. Its major mission is similar to that of the imagery interpretation section supporting the field army G2 Air.

c. Division. Each division has an imagery interpretation section which is part of the MI Detachment, Division (TOE 30–17). This section supports the division G2 Air. Its major mission is immediate interpretation of imagery received from the surveillance aircraft of the corps aerial surveillance company as well as GST imagery produced in support of their headquarters. It also assists in operational planning and targeting for division weapon systems.

d. Other Units. Other units having an aerial surveillance or target acquisition capability are provided imagery interpretation support.

(1) Armored cavalry regiments and separate brigades are provided imagery interpretation support from their attached MI detachments (TOE 30–14).

(2) Missile commands contain organic image interpreters.

(3) The field artillery target acquisition battalion is provided imagery interpretation support from within the resources of the MI detachment at corps.

Section II. TACTICAL USES OF IMAGERY

9–5. General

a. The value of imagery is largely dependent upon the timeliness of the information extracted from it. Items of immediate tactical value can be extracted and furnished to the requester in a relatively short period of time since only a minimum of detailed interpretation and analysis is usually required. Special intelligence studies require a great deal of preparation, research, and detailed interpretation. While the tactical application of imagery is similar at all echelons of the field army, emphasis on its tactical usage will vary with the echelon at which it is used, the tactical situation, and the speed with which the information is required.

b. The primary role of imagery is to provide intelligence information to the commander. Normally this information is provided by the reports furnished by imagery interpretation personnel from the imagery at hand. Because the imagery itself is bulky, requires special storage and protection, and does not lend itself to proper interpretation by untrained personnel, normally it is not furnished to the requesting agency unless there is a particular purpose to be served by doing so. Instead, imagery normally is kept for a specified period of time by the imagery interpretation section at the echelon where the imagery interpretation report was rendered and then destroyed (para 9–15*d*).

9–6. Specific Tactical Uses of Imagery

a. Imagery is used to—

(1) Provide information in response to the commander's EEI and OIR.

(2) Identify items of immediate tactical significance.

(3) Assist in operational planning.

(4) Provide a current, accurate display of an area of interest to the commander to assist him in the tactical employment of his combat troops and his tactical weapons.

b. In providing this assistance, the imagery interpreter utilizes imagery to provide the following types of information:

(1) *The locations of enemy installations.* These include such installations as missile, artillery, mortar, and automatic weapons emplacements; minefields, barbed wire, obstacles, and strong points.

(2) *Enemy supply installations.* These include the locations of enemy supply installations and lines of communication. These include forward area supply depots, rear area supply depots, railheads, transshipment points, and main supply routes.

(3) *Enemy personnel.* The location of enemy personnel and equipment concentrations.

(4) *The analyses of terrain.* These include trafficability analyses of terrain for all types of military units and operations to include road and brigade studies. This use of imagery should not be confused with the detailed terrain studies prepared by Army Engineer units.

(5) *Intelligence information.* The confirmation or denial of intelligence information obtained from other sources or agencies such as order of battle personnel, interrogation of prisoner of war personnel, technical intelligence teams, and clandestine sources.

(6) *The preparation of target folders.* Image interpreters assist in the preparation of target folders and target information sheets on selected targets. Target folders may be supplemented by detailed and special imagery intelligence reports or by selected imagery.

(7) *Damage assessment.* Image interpreters determine the type and extent of damage.

(8) *Mosaics and panoramas.* Mosaics and panoramas may be used for planning and briefing purposes and for locating and designating targets. Preparation of mosaics and panoramas is time consuming and should be resorted to only when an imagery report or current map coverage will not suffice.

(9) *Map correction and supplement.* Discrepancies occur between what is shown on maps and what actually exists as shown by aerial imagery. These discrepancies are noted and reported.

Section III. IMAGERY INTERPRETATION REPORTS

9–7. General

a. The imagery interpretation report formats contained in this manual are compatible with those established in NATO Standardization Agreements. NATO titles have been changed as indicated below to make them compatible with current U.S. Armed Forces sensor capabilities; however, when these formats are used in operations involving NATO organizations, the original NATO title should be substituted for ease of international understanding.

Format title for NATO use	*Format title outside NATO*
Mission Report (MISREP).	No change.
Hot Photo Report (HOTPHOTOREP)	Hot Report (HOTREP).
Immediate Photo Interpretation Report (IPIR).	Immediate Imagery Interpretation Report (IIIR).
General Photo Interpretation Report (GPIR).	General Imagery Interpretation Report (GIIR).

b. The basic types of imagery interpretation reports are the mission report, hot report, immediate imagery interpretation report, and the general imagery interpretation report. Imagery interpretation reports serve two parallel objectives; they insure the maximum exploitation of information and its timely dissemination to the user. The requirements, preparations, and dissemination of these reports are discussed below and shown in figure 9–1. While the mission report is designated as an imagery interpretation report, normally it is transmitted by the ARLO or G2 Air representatives who debrief flying crews upon completion of their missions. Mission reports are discussed in chapter 10.

c. All imagery interpretation reports except the general imagery interpretation report follow a prescribed format as to content and organization. This facilitates electronic transmission and insures that the information transmitted is complete and understandable to the recipient. The general imagery interpretation report normally is too voluminous to permit radio transmission. All other imagery interpretation reports normally are transmitted by electrical means. This requires the use of the standard joint message form heading as prescribed in AR 105–31. Following this prescribed heading is the standardized body of the report as shown in figure 9–2.

TYPE	PURPOSE	WHEN PREPARED	PREPARED BY	TRANSMITTED BY	TRANSMITTED TO
IN-FLIGHT	TO SEND FROM THE AIRCRAFT INFO GAINED WHILE IN FLIGHT	AS ORDERED OR AT DISCRETION OF THE PILOT	PILOT	RADIO	REQUESTOR
MISREP	INFORM THE REQUESTOR OF MISSION RESULTS	WITHIN 30 MINUTES AFTER A/C LANDS	DEBRIEFER BASED ON PILOT STATEMENT AND POSSIBLE SENSOR READOUT	RADIO, TELEPHONE, TWX	REQUESTOR AND OTHER INTERESTED AGENCIES
HOTREP	INFORM REQUESTOR OF RESULTS OF QUICK SENSOR READOUT IF INFO HAS NOT BEEN REPORTED IN MISREP--USED TO SUPPLEMENT OR AMEND MISREP	WITHIN 1 HOUR AFTER A/C LANDS; HOWEVER, IF LATER STUDY REVEALS ADDITIONAL INFO ANOTHER HOTREP MAY BE SUBMITTED	IMAGERY INTERPRETER; DEBRIEFER	RADIO, TELEPHONE, TWX	REQUESTOR OTHER INTERESTED AGENCIES TO INCLUDE ALL MISREP ADDRESSEES
IIIR	TO PRIVIDE MORE DETAILED INFO THAN THE HOTREP	WHEN REQUESTED OR WHEN ADDITIONAL IMAGERY STUDY REVEALS INFO NOT PREVIOUSLY REPORTED WITHIN 4 HOURS	IMAGERY INTERPRETER	RADIO, TELEPHONE, TWX	REQUESTOR INTERESTED AGENCIES
GIIR	PROVIDE DETAILED INFO; PRIMARILY FOR PLANNING FUTURE OPERATIONS	AS REQUESTED	IMAGERY INTERPRETER	TELETYPE,COURIER OR FACSIMILE	REQUESTOR

Figure 9-1. Imagery interpretation reports.

HEADING

ALL REPORTS USE STANDARD MESSAGE FORM HEADINGS FOR ELECTRICAL TRANSMISSIONS

TYPE OF REPORT

THE TYPE OF REPORT IS ALWAYS THE FIRST ITEM IN THE MESSAGE, FOLLOWED BY THE MISSION NUMBER

INTERNAL ORGANIZATION

PARA	TYPE OF REPORT				
	INFLIGHT REPT	MISREP	HOTREP [1]	IIIR [2]	GIIR [3]
A.	LOCATION IDENTIFIER	SAME	SAME	SAME	HAS NO PRESCRIBED FORMAT.
B.	TIME OVER TARGET	SAME	SAME	SAME	
C.	RESULTS	SAME	SAME	SAME	
D.	NOT USED	PHOTO CONFIRMATION	TYPE PHOTO & EXPOSURE NO.	SAME	
E.	NOT USED	OTHER INFORMATION	QUALITY & SCALE OF IMAGERY	SAME	
F.	NOT USED	NOT USED	PERCENT OF TARGET COVERAGE	SAME	

1 TITLE CHANGES TO HOTPHOTOREP FOR USE IN NATO OPERATIONS.
2 TITLE CHANGES TO IPIR FOR USE IN NATO OPERATIONS.
3 TITLE CHANGES TO GPIR FOR USE IN NATO OPERATIONS.

Figure 9–2. Format for imagery interpretation reports.

9–8. Hot Report (HOTREP)

A HOTREP is rendered at the earliest possible time after imagery has been received for interpretation. It is confined to a short, concise answer for which the mission was flown. It also can report a sighting of significant intelligence value. The report is rendered as soon as the imagery has been inspected the first time, or immediately upon discovery of a significant item. The report is disseminated to the requester and other interested agencies by the most rapid means available. A HOTREP is not furnished if the ARLO or G2 Air representative's mission report has already been sent and no additional information has been discovered on the imagery. The initial HOTREP should be

(CLASSIFICATION)

USE STANDARD MESSAGE FORM HEADING	
FORMAT (NOT TO BE TRANSMITTED)	**EXAMPLE MESSAGE**
HOTREP[1] ALWAYS START OF MESSAGE.	HOTREP[1]
AIR TASK/MISSION NO.	2/A255.
A. LOCATION IDENTIFIER SUCH AS: TARGET NO., COORDINATES, LINE SEARCH NO. etc.	A. LC. 725355.
B. TIME PHOTOS TAKEN (DATE-TIME GROUP).	B. 231150Z
C. RESULTS	C. FROGMEN IDENTIFIED IN TARGET VICINITY.
D. TYPE OF PHOTOGRAPHY EXPOSURE NO.	D. P0001-0003.
E. QUALITY OF PHOTOGRAPHY/SENSOR IMAGE/APPROXIMATE SCALE	E. GOOD, LARGE.
F. PERCENTAGE OF PHOTO/SENSOR COVERAGE.	F. 100 PER CENT.

1. TITLE CHANGES TO HOTPHOTOREP FOR USE IN NATO OPERATIONS

(CLASSIFICATION)

Figure 9–3. Hot report.

(CLASSIFICATION)

USE STANDARD MESSAGE FORM HEADING

FORMAT (NOT TO BE TRANSMITTED)	EXAMPLE MESSAGE
IIIR[1] ALWAYS START OF MESSAGE.	IIIR[1]
AIR TASK/MISSION NO.	2/A603.
A. LOCATION IDENTIFIER. SUCH AS: TARGET NO./GRID REFERENCE, etc.	A. HWY BRIDGE AT NA41B384.
B. TIME PHOTOS TAKEN (DATE-TIME GROUP).	B. 121050Z AUG
C. RESULTS	C. THIS BRIDGE IS A SIX SPAN MASONRY ARCH STRUCTURE LENGTH 200 METERS WIDTH 10 METERS IT IS BASED ON 5 CONCRETE PIERS AND TWO CONCRETE ABUTMENTS. AT TIME OF PHOTGRAPHY THE BRIDGE WAS FULLY USABLE.
D. TYPE OF PHOTOGRAPHY/EXPOSURE NUMBERS.	D. P 0012-0014.
E. QUALITY OF PHOTOGRAPHY/SENSOR IMAGE/APPROXIMATE SCALE.	E. GOOD, LARGE.
F. PERCENTAGE OF PHOTO/SENSOR COVERAGE.	F. 100 PER CENT.

1. TITLE CHANGES TO IPIR FOR USE IN NATO OPERATIONS.

(CLASSIFICATION)

Figure 9–4. Immediate imagery interpretation report.

submitted within one hour after the mission aircraft has landed. If during subsequent interpretation a significant finding is made, an additional HOTREP may be forwarded on an immediate basis. Format for a HOTREP is shown in figure 9–3.

9–9. Immediate Imagery Interpretation Report (IIIR)

The IIIR is furnished only when specifically asked for by the mission requester or when the full interpretation of the imagery reveals additional intelligence information not previously reported on the HOTREP or the mission report. The IIIR normally is completed within four hours after mission aircraft have returned. An IIIR deals with only one imagery mission and includes an evaluation of the quality of the imagery and area coverage accomplished. Format for an IIIR is shown in figure 9–4.

9-10. General Imagery Interpretation Report (GIIR)

The GIIR is designed to provide detailed intelligence information in response to a specific request, primarily to assist in planning future operations. It may be made from a new mission specifically flown for the requirement or from existing coverage. No special format is used; the content will vary according to the requirements of the information being reported. Reports are submitted to meet the time limitations imposed by the requester.

Section IV. TARGET FOLDERS

9-11. General

Supervision of the aerial surveillance and reconnaissance aspects in support of the target program is the responsibility of the G2 Air. To assist him in this function, imagery interpretation personnel provide intelligence information taken from aerial imagery that can be used in compiling target folders. Once a potential target has developed to the point where it is a suitable target for employment of a weapons delivery system, the G2 Air will recommend its inclusion among those targets selected for attack.

9-12. Target Folders

Before a target can be selected for attack, the type of target must be determined—its composition, strength, vulnerabilities, and permanency—to allow for the selection of an appropriate weapons system to be employed. A target study requires the collection and evaluation of many items of information all of which ultimately will add up to the identification or elimination of an actual target. The G2 Air and image interpreter use the target folder to compile the necessary information. A major prerequisite for starting a target folder is the relative degree of permanence of the potential target. Transitory targets must be selected for attack by employing methods other than the target folder.

9-13. Contents of Target Folder

A target folder should be maintained on all potential targets. The composition of the folder will vary with the type of target but should contain as a minimum—

a. A target folder index of items contained therein.

b. A target worksheet which includes a target designation, description, location, and any other special intelligence information. It should also include the source and evaluation of the information, the date of confirmation, and all agencies who have been, or will be, furnished the information.

c. A target information sheet which contains a detailed listing of physical characteristics of the target to include separate elements of large or "hard" targets such as large supply facilities or multiple building complexes, the significance of the area as a military target, obstructions to low-flying aircraft in the area, and defenses around the area to include air defense measures.

d. A target illustration sheet which normally consists of an annotated photograph of the target area.

e. Any additional target information not included elsewhere.

Section V. SECURITY CLASSIFICATION OF AERIAL IMAGERY

9-14. General

Aerial imagery is classified according to the degree of classified information that it contains or according to the methods by which it was obtained. The determination to classify imagery according to content and the degree of classification selected is the responsibility of the commander of the area over which the imagery has been taken. In actual practice, the area commander will designate the classification procedures; however, the unit that controls the sensor equipment will be responsible for mark-

ing the imagery produced. Security classification of imagery always will be accomplished in accordance with AR 380–5 and AR 380–6. In accordance with AR 380–5, electronic transmission of aerial imagery except for secure means is prohibited.

9–15. Marking, Storage, Control, and Destruction of Classified Imagery

a. Actual marking of imagery is governed by the method in which it is handled and stored.

(1) Negatives and prints in uncut rolls need only be marked with the classification at the beginning and end of each strip.

(2) Negatives and prints that are cut must be marked individually. Individual negatives and prints must be marked top and bottom on each copy. In addition, the classification should be placed beneath the legend (title block) of each negative and in the center of the reverse side of each print. Negatives must be marked so that the classification will reproduce clearly on all copies made.

b. In addition to marking negatives and prints, all containers and wrappers used to store classified imagery must be conspicuously marked in compliance with AR 380–5. The storage of classified imagery is no less important than for other classified documents. Under conditions of 24-hour operations, large volumes of classified imagery can be secured by keeping it under the physical control of the duty team.

c. Classified imagery will be furnished only to those who possess proper clearance and have a need-to-know. Receipt and registration requirements are the same as for other documents.

d. Destruction of classified imagery is the same as for other classified documents. With imagery, bulk destruction is a normal but a time-consuming process. To facilitate destruction procedures and eliminate keeping excess imagery on hand, all echelons should establish a periodic imagery review program to identify imagery no longer required so that it may be destroyed or furnished to other interested agencies. Local SOP will establish imagery retention periods; however, the tactical value of imagery normally will have been fully exploited within 90 days after acquisition. This period will be shortened or lengthened dependent upon the degree of tactical movement taking place in the combat area and the echelon of command at which the imagery is being retained.

9–16. Derivative Classification

Reports and special studies developed from classified imagery and referring directly to that imagery will require a derivative classification at least equal to the classification of the imagery itself. Individual items of information contained in the report which would require a factor in the final selection of the overall classification of the report or study. When the final classification is made on a derivative basis only, group markings must correspond to the group markings on the imagery.

CHAPTER 10
BRIEFINGS AND DEBRIEFINGS

STANAG 2102, 3377; SEASTAG 3377

Section I. GENERAL

10-1. Purpose

Briefings and debriefings are conducted for all aviators, aerial observers, and airborne sensor operators as a means of insuring the most effective utilization of available aerial surveillance and reconnaissance means.

10-2. Briefings

Briefings serve the purpose of furnishing flying crews a thorough understanding of current enemy and friendly situations, the terrain and weather, the requirements of the assigned missions, and other administrative instructions that facilitate the successful accomplishment of their tasks. Briefings by Army ARLO or G2 Air representatives may be given separately or as a part of a unit briefing presented by the commander of the Army or Air Force unit providing the supporting aircraft.

10-3. Debriefings

Debriefings of flying crews are conducted to obtain from crewmembers any information of intelligence value which they have acquired during the course of their mission. This information may be in addition to that which they have collected by an airborne sensor means, or it may confirm or refute information indicated on their sensor returns. Debriefings are conducted immediately upon return of a flying crew. Many times items of significant interest will be identified through debriefing long before the sensor results have been processed and interpreted.

10-4. Conduct of Briefings and Debriefings

All briefings and debriefings discussed in this chapter are limited to those presented by the attached ARLO or G2 Air representative present with a flying unit. When possible, debriefings are conducted by the same person who conducted the briefings. These briefings and debriefings do not replace unit briefings conducted at the discretion of the commander of the flying unit.

Section II. BRIEFINGS

10-5. General Briefing

a. The ARLO or G2 Air representative general briefing normally is given on a daily, preplanned basis to all flying crews of the flying unit. Usually it is presented as part of the flying unit's daily briefing. The unit's daily briefing includes presentations by the unit commander, the operations officer, the intelligence officer, the weather officer, and other specialists and technicians as directed by the unit commander. The general briefing of the G2 Air representative or ARLO acquaints flying personnel with the current (next 24 hours) operations, the enemy and friendly situation, terrain and weather, and administrative instructions. This general briefing aids in reducing the amount of information which must be presented at a preflight briefing.

b. The information presented by the ARLO or G2 Air representative in the general briefing follows the format of a standard operation order (fig. 10-1). Items in an operation order such as weather, administration, or logistics can be eliminated by the ARLO or G2 Air rep-

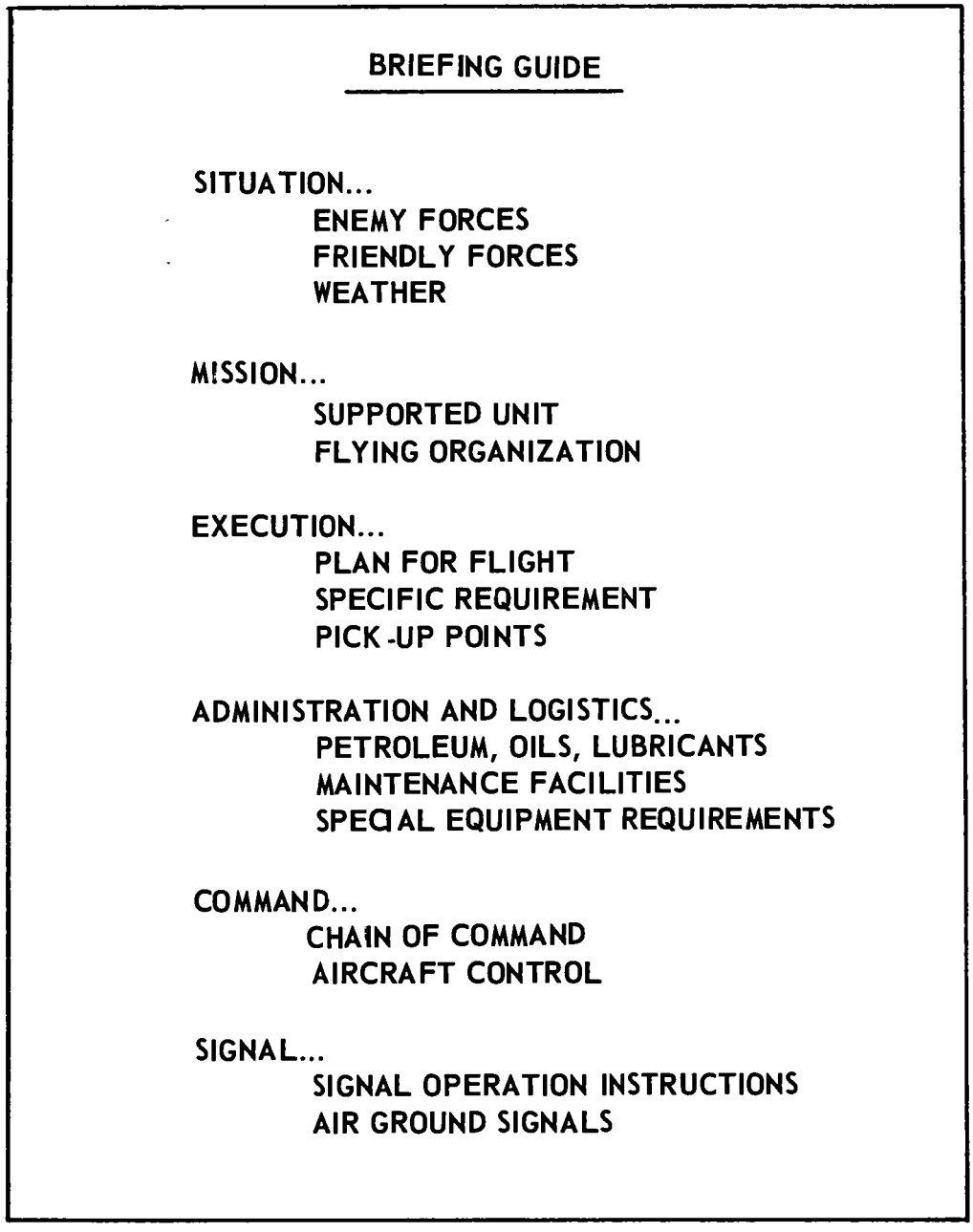


Figure 10–1. Briefing guide.

resentative when covered by other briefers. As a minimum, subjects which should be covered in the general briefing include—

(1) *Current summary of the situation.*

(*a*) Current friendly and enemy activity.

(*b*) Resume of enemy order of battle.

(*c*) Current estimate of enemy's capabilities.

(*d*) Identification of enemy lines of communication and possible traffic choke points.

(*e*) Location of suspected or possible enemy assembly or activity areas.

(*f*) EEI or OIR—General and specific elements relative to zone in which mission is planned and the specific requirements of the mission.

(2) *Terrain in the area of operations.*

(*a*) Location of critical terrain features.

(*b*) Specific terrain and target area environmental characteristics and their impact to the assigned task (mission).

(*c*) Environmental/Target Characteristics and their effects or impact to selected sensor acquisition.

(3) *Plan.* Discussion of the supported unit's aerial surveillance and reconnaissance plan.

10–6. Preflight Briefings

A thorough understanding of the aerial surveillance or reconnaissance mission to be performed enhances mission accomplishment by the aircraft crew. The ARLO or G2 Air representative preflight briefing is conducted to provide flight crews with the latest information concerning the purpose and importance of their mission, problems which may be encountered, and specific information desired by the requester. The preflight briefing is more specific than the general briefing. Time allotted for the preflight briefing will vary from a few minutes for an immediate mission to as much as 30 minutes for a preplanned mission. The briefing may be by the ARLO or G2 Air representative alone, or it may be given in conjunction with the preflight briefing presented by members of the flying unit. It may even be necessary to provide preflight-type briefing information to an aircraft crew in flight, should an adjustment be made to their current mission or an actual diversion be made to another mission. Items covered include—

a. Mission requirements.

(1) Identification of requesting unit.

(2) Mission priority.

(3) Type of mission.

(4) Location and description of target and target area.

(5) Time on target (TOT).

(6) Specific intelligence requirements.

(7) If a photomission, type of coverage and desired scale.

(8) Coordinating instructions, unit call signs, preplanned fires, and rendezvous instructions.

(9) Frequencies and call signs for lifting supporting fires.

(10) Requirement for confirmatory photography, when appropriate.

(11) Requirement for in-flight reporting, when appropriate.

(12) An authentication system should be used when communicating.

b. Changes in friendly and enemy dispositions since last general briefing.

c. Special checkpoints and other navigational aids.

d. Possible enemy countermeasures en route to, from, and in the target area.

10–7. Briefing Materials

a. Current information required to present accurate ARLO or G2 Air representative briefings is received through Army channels. ARLO normally receive their briefing material through their parent MIBARS organizations. This material consists usually of an ARLO packet developed by the field army G2 Air duty team and delivered through the MIBARS operations and intelligence section by the battalion's organic delivery platoon or over the MIBARS operations net. G2 Air representatives receive current information from their own G2 Air section. This information normally is transmitted by signal communications means as discussed in chapter 6, or is delivered by scheduled courier runs. In addition, operational traffic on the MIBARS operations net or command intelligence net will furnish current information of briefing value.

b. To provide a rapid means of presenting preflight briefings on the most current information readily at hand, the briefing officer will require various briefing aids. The major aids to be maintained include—

(1) Situation maps to present both the enemy and friendly situations and show the areas for specific missions.

(2) Aerial photographs to familiarize aircrews with terrain features, the target area, and possible target locations.

(3) Files and records for ready reference,

to include intelligence reports, operation orders, order of battle, and special studies.

(4) Identification keys to orient flying personnel on new equipment or to assist in debriefings by identifying objects sighted.

(5) Any other graphic aid which will increase the flying crews' recognition and retention capabilities. Examples of these graphic aids are terrain models, special photographs, sketches, and models of various types of equipment.

Section III. DEBRIEFINGS

10–8. Purpose

Debriefings are an important part of the ARLO and G2 Air representatives' duties. The purpose of debriefings is to insure the collection of the maximum amount of usable information and to allow the dissemination of this information in the minimum amount of time after aircraft touch down. If the flying crew makes an in-flight transmission of information via the spot report receiver system or over a prearranged frequency direct to the requesting unit, it should also be discussed in the debriefing for possible additional information. In-flight reports are included as part of the debriefer's mission report.

10–9. Planning Debriefings

To facilitate accomplishment of a debriefing, the use of aids should be preplanned. Items such as maps, special photography, models, and other aids which will assist flight crews in recalling observations should be made available. A debriefing checklist of a format similar to figure 10–2 is used to keep a debriefing moving smoothly and to eliminate gaps in the information given or needless duplication of comments. When required for specific intelligence purposes, debriefers must plan to bring in specialists or technicians, such as image interpreters, technical intelligence specialists, and other qualified intelligence specialists, to assist in debriefing by asking questions within their specialized areas.

10–10. Conduct of Debriefings

a. Debriefings normally are conducted in coordination with the flying unit's intelligence officer. They are conducted informally and with due consideration for the physical and mental fatigue of the flight crew. Each crewmember normally is debriefed individually. Debriefings generally are conducted without interruption. Items developed that have significant value immediately should be transmitted as a HOTREP. When possible, debriefings should be recorded to assist in developing the complete mission report after the debriefing is completed.

b. In the debriefing, each crewmember describes, in his own words, the mission and his observations or findings. The debriefer asks questions to clarify statements or guide the crewman in his narrative. The debriefer must establish rapport with the crewmember to be effective. He must rely upon his own personality and acquaintances with the personnel of the flying unit to put the crewmember being interrogated at ease. Before the debriefing is terminated, both the crewmember and the debriefer should review the notes for completeness and accuracy. The debriefer should not—

(1) Ask leading questions.

(2) Discredit the crewman's observations or beliefs.

(3) Be overly insistent in questioning.

(4) Argue or introduce needless discussion.

(5) Keep a briefing going longer than is necessary.

Section IV. RECORDS AND REPORTS

10–11. Records

All ARLO and G2 Air representatives maintain records to assist in the performance of their duties and serve as references for future operations and periodic resumes of operational accomplishments. The minimum records maintained include—

a. Daily Journal (reference FM 101–5).

DEBRIEFING CHECKLIST

DATE _____

MISSION NUMBER _____ PILOT _____ OBSERVER _____

ELEMENT DESIGNATION _____

TYPE OF MISSION _____

AIRCRAFT _____

TARGET DESCRIPTION _____

INFLIGHT REPORTS MADE _____

CONTACTS MADE DURING FLIGHT _____

ANY DEVIATIONS MADE FROM PLAN _____

SIGHTINGS LOCATION DESCRIPTION TIME

INSTALLATIONS _____

MOVEMENTS _____

COMMUNICATIONS AND ELECTRONICS _____

_____

WEAPONS _____

DEFENSES _____

OBSTACLES _____

MISCELLANEOUS _____

DEBRIEFERS NAME AND ORGANIZATION _____

Figure 10–2. Debriefing checklist.

b. Aircraft and sensor equipment status record.

c. Current planned, in-flight, and completed missions.

d. Operation orders and intelligence reports.

e. Current briefing notes and aids.

f. Completed reports and action summarizations.

10–12. Reports

a. In-Flight Report. The in-flight report is transmitted by an aircraft crew during the

TRANSMITTED BY VOICE RADIO	
FORMAT (NOT TO BE TRANSMITTED)	**EXAMPLE MESSAGE**
INFLIGHT REPORT: ALWAYS START OF MESSAGE. **AIR TASK/MISSION NO.** A. LOCATION IDENTIFIER (ONLY IF NECESSARY FOR CLARIFICATION) B. TIME ON TARGET/TIME OF SIGHTING. C. RESULTS. RESULTS OF MISSION, BRIEF DESCRIPTION OF OBSERVATION, RECOMMENDATION FOR ATTACK/REATTACK IF NECESSARY.	**INFLIGHT REPORT.** **3/A501.** A. LC 7354. B. TARGET SIGHTED 1610Z. C. OBSERVED FIVE TANKS IN WOODLINE. FIVE ADDITIONAL TANKS WITH TROOPS SEEN MOVING WEST OUT OF HOF AT 1615Z.

Figure 10–3. In-flight report.

conduct of a mission as soon as they are able to report the results of their mission or to report tactical information of such importance and urgency that delay in reporting would render the information useless. The report is transmitted by voice radio, in the clear, unless prearranged codes have been established. The format for the in-flight report is standardized and shown in figure 10–3.

b. ARLO and G2 Air Representative Reports. Three types of reports normally are submitted by ARLO and G2 Air representatives. Additional reports may be required by the supported G2 Air or the MIBARS elements commander as the situation dictates. The three common reports are—

(1) *Hot report (HOTREP).* This report is a short, concise report covering significant information of immediate tactical value (para 9–8). Normally it is disseminated as a result of receipt of significant items of information during a debriefing. The HOTREP format is standardized and is as shown in figure 9–3.

(2) *Mission report (MISREP).* A mission report is submitted at the conclusion of each mission. It is based on the notes and observations made during the debriefing and includes any in-flight report made by the aircraft crew and any HOTREP sent by the debriefer while conducting the debriefing. Preparation and dissemination of mission reports are accomplished as rapidly as possible after completion of the mission and normally not later than 30 minutes after aircraft touchdown. The format for a mission report is standardized and is shown in figure 10–4.

(3) *Summary report.* The summary report is a consolidation of information on selected enemy activity and is submitted to the G2 Air according to the schedule which he establishes. These reports are used by the G2 Air to analyze the enemy situation, the effectiveness of the aerial reconnaissance and surveil-

lance effort, and to assist in planning future operations. Format will vary with the requirements of the report.

c. Dissemination of ARLO and G2 Air Representative Reports.

(1) The normal dissemination of ARLO reports is through the MIBARS headquarters to the G2 Air. The ARLO transmits his HOTREP and mission reports over the MIBARS operations net or uses the delivery platoon to the Operations and Intelligence Section of the MIBARS. At the MIBARS the report is simultaneously disseminated to the G2 Air duty team and other interested agencies as directed. The summary report is transmitted to the G2 Air in the same manner. Copies of all ARLO reports at detachment level are furnished to the detachment commander for his information and to assist the detachment's imagery interpreters in the accomplishment of their mission. His reports may be transmitted in conjunction with imagery interpretation reports on the same mission if no time delay will be involved.

(2) The G2 Air representative normally will use either radio, telephone, or courier to send his reports directly to the G2 Air. Copies of his reports are furnished to the flying unit and imagery interpretation personnel concerned with interpreting the imagery obtained as a result of the same mission.

(CLASSIFICATION)

USE STANDARD MESSAGE FORM HEADING	
FORMAT (NOT TO BE TRANSMITTED)	**EXAMPLE MESSAGE**
MISREP: ALWAYS START OF MESSAGE.	MISREP.
AIR TASK/MISSION NO.	2/A55
A. LOCATION IDENTIFIER, SUCH AS: TARGET NO., COORDINATES	A. LC 725355.
B. TIME ON TARGET/TIME OF SIGHTING.	B. 231150Z.
C. RESULTS	C. BRIDGE OVER RIVER U/C
D. PHOTO CONFIRMATION	D. YES.
E. OTHER INFORMATION	E. CONCENTRATED LIGHT ANTIAIRCRAFT ARTILLERY AT TARGET, 8/8 CEILING 500 FT.

(CLASSIFICATION)

Figure 10–4. Mission report.

CHAPTER 11
AERIAL SURVEILLANCE AND RECONNAISSANCE IN STABILITY OPERATIONS

Section I. GENERAL

11-1. Introduction

Doctrine for aerial surveillance and reconnaissance in stability operations is the same doctrine as applied to other types of warfare. Methods and techniques of employment remain the same only varying by application to the scope of surveillance and reconnaissance requirements unique to the insurgency situation and environment. However, the difficulty encountered in intelligence acquisition is greatly increased due to the nature of insurgency concepts, force structure, tactics, and practices. The insurgent forces in their areas of operation as well as in the field do not present or generate those indications of their existence in an environ that are easily detectable or identifiable. This differs considerably from the relative ease enjoyed in detecting conventional enemy forces in the conventional types of warfare. The success of aerial surveillance and reconnaissance efforts in counterinsurgency and stability operations will be relative to the degree of environmental acclimation of all participants beginning with the information requesters and continuing through to the image interpreters.

11-2. Special Considerations

a. Stability operations encompass the terrain of an entire country with attendant problems of seacoasts and ill-defined international boundaries. The insurgent enemy is comparatively difficult to find. The terrain on which he organizes sanctuaries may be remote, sparsely populated and may have high local relief and poor lines of communication. His security practices and his habit of blending into existing cultural activities and features make his areas of habitation difficult to identify. His camouflage and concealment techniques make dumps, way stations, fortifications and supply routes hard to detect.

b. The problem is definition; to detect indicators of enemy activity, versus natural civilian activity, which are generally blended in an environmental situation to present a status of normalcy.

c. The prerequisite to success is a thorough understanding of the total sum of the natural and human factors involved in the area of operations. These factors include detailed knowledge of enemy forces and methods of operation, coupled with physical geography stressing vegetation, and cultural aspects as well as the sociological and economical aspects of rural and urban configurations and activities, agriculture, industry, transportation, and communications.

d. Insurgents can be detected through indirect, as well as direct, evidence of their presence. Direct evidence—such as easily recognized uniforms, equipment, military type vehicles, deliberate field fortifications, logistical facilities, and large troop movements—normally is difficult to gather in stability operations. Indirect evidences of insurgent presence are most probably the indictors which will be first discovered. Examples of indirect evidences are:

(1) Ostensible civilian activity in isolated areas or in areas where activity normally has not been observed.

(2) Unexplained increases in the dwelling density of a village or hamlet.

(3) Built-up areas not shown on official maps or which are first detected as a result of comparative photography of the area.

(4) Unexplained movement of local in-

habitants from one location to another or across international boundaries.

(5) Unexplained abandonment of villages, cultivated areas, equipment, or food sources.

(6) Isolated open areas being prepared for, or under cultivation with, food crops or small areas of forest being cleared of underbrush and thick foliage for no apparent reason.

(7) Logging, charcoal, and other rural-type production in areas previously unworked or not easily accessible to people of the area.

(8) Roads, cart trails, and footpaths that are inconsistent with population centers and the agricultural practices of the area.

(9) Other unexplained disturbances to the normal vegetative cover of the area.

(10) Fires in remote areas or burned out areas that have not been caused by local ground clearing operations or indigenous cultivation.

(11) Fish nets located in isolated areas or areas previously unfished.

(12) Abnormal increase in traffic on establishment roads or waterways.

(13) Unidentified or suspicious activity detected by IR, radar, or other sensory devices at night or during bad weather.

11-3. Requirements for Effective Aerial Surveillance and Reconnaissance

a. Aerial surveillance and reconnaissance is required throughout all phases of insurgency. Requirements differ at each level—national, subnational, and tactical unit—according to the particular phase of insurgency involved.

b. The intelligence officer, by close liaison, coordination and cooperation, must make certain that aerial surveillance and reconnaissance is integrated into the overall collection plan supporting the stability operation. Further, he must coordinate closely with sources of information other than intelligence collection agencies. This includes host country civilian, paramilitary, and military agencies and U.S. and allied military and civilian organizations in-country.

c. Maximum use must be made of comparative cover. This includes integration of all sensors and sensor modes available to include vertical and oblique photography, color and camouflage detection photography, visual observation, and infrared (IR) and side looking airborne radar (SLAR) imagery. Employment of sensors to detect enemy activity must be based upon a knowledge and analysis of all available intelligence information.

d. Special consideration should be given to obtaining information from collateral sources to enlarge imagery interpretation key materials.

Section II. AERIAL SURVEILLANCE AND RECONNAISSANCE OPERATIONS

11-4. General

General considerations in planning, operations, and coordination of aerial surveillance and reconnaissance as described in this manual remain valid for stability operations. However, due to the necessity of search for minute detail, the following amplification of methods and techniques is provided.

11-5. Visual Aerial Surveillance

a. Insurgent activity may be better identified by repetitive visual area search, by assigning pilot and observer personnel to search the same area on a daily basis as long as possible. By looking at the same topography, the same manmade objects contained there, and the same human activities that take place day after day, personnel familiar with the area will more readily detect changes which indicate enemy activity. "Low and slow" type aircraft are the most suitable platforms because they afford a closer view of the terrain for a longer period of time than high performance aircraft.

b. A special employment of visual aerial surveillance in stability operations is the use of continuous day-night visual observation over friendly installations. Insurgent attacks

against installations may involve the use of mortars, rockets, and recoilless rifles as well as demolitions and individual weapons. The employment of crew-served weapons requires the selection and preparation of weapons positions, fields of fire, and the stock piling of ammunition in advance of the attack. To accomplish this preparation, the insurgent must infiltrate undercover into the selected areas which surround the installation. Continuous, visual aerial surveillance out to the maximum effective range of the weapons available to the insurgent may disclose any unusual movement taking place within the area, or even the actual preparation of firing positions.

11–6. Permanent Record Imagery

a. Hand-Held Camera Photography. When used with trained observers on organic observation type aircraft particularly with self-developing film, provides an effective supplement to other aerial imagery in recording visual sightings and providing quick reaction photography of selected areas or objects of interest.

b. Conventional Photographic Imagery, Scale of Coverage.

(1) The scale of coverage, as a general rule, should be the largest possible consistent with the type of coverage desired, intended use, size of area to be recorded, time allocated for the mission, type of aircraft and systems available and the degree of urgency of the desired information. The following recommended scales vary from those in chapter 4 due to the special factors inherent in stability operations: Initial record 1:10,000—1:25,000, general intelligence record: 1:5,000—1:10,000, and detailed intelligence record 1:5,000 or larger.

(2) Larger scales are required to aid in the search for individual activity such as one or two foxholes or a single weapons emplacement, camouflaged objects to include cave entrances and supply caches, mockups in training areas, hut or lean-to and elevated OP construction, charcoal making and the use of pack animals, wagons, and handcarts.

c. Radar Imagery. Unlike photography or visual sightings which can more readily permit identification of an indicator as insurgent or friendly MTI radar will record friendly or neutral indicators with the same degree of "truth" as it reports enemy indicators. Additionally, many indirect indicators of insurgent activity are not recordable on present aerial imagery. As a general rule, radar surveillance should be established where insurgent movement is expected to occur in the degree necessary to be detected and register on the sensor equipment. This is best accomplished by targeting areas or lines of communication generally restricted to enemy occupation or by secession of civilian movement under governmental curfew control.

d. Infrared Imagery. Infrared (IR) imagery and photographic imagery are complementary and for best results the two should be utilized together when possible. IR coverage can be used effectively particularly where the development of comparative covers allows an interpreter to detect changes of patterns by relative heat emissions, within suspect areas. However, as with camouflage discipline, emissions sources can be removed from troop concentration or sufficiently attenuated either by dense natural overhead canopy or preparation of earth works. Therefore, the information interpreted from IR imagery must be correlated with intensive collateral information and a thorough knowledge of the practices of insurgent forces and their methods of operation.

11–7. Reports

While hot reports and immediate imagery interpretation reports continue to serve specific intelligence requirements in stability operations, there is concurrently an increased need for the more detailed general imagery interpretation reports. These reports are of greatest value to the requester who needs information on terrain characteristics, trafficability, road and trail reports, landing and drop zones, or other items unique to the situation/environ which require extensive interpretation, evaluation, and photogrammetric measurements. In many instances, these reports include the preparation of overlays and other graphic displays such as photomosaics, annotated photography, and target surveillance folders.

11-8. Development of Interpretation Capabilities

a. In order to obtain the greatest value from imagery, interpreters must be oriented and acclimated toward a specific area of stability operations. All sources of germane background information on the area, its people, and the way they live, should be furnished the interpreter to help him better understand those things and related indications he must detect, identify, and interpret. Maximum assistance must be made of host country military and civilian personnel, and in-country U.S. agencies that have background and experience on-the-ground in the areas of interest, to identify and interpret new or unusual items discovered on imagery.

b. During early phases of insurgency, the interpreters' efforts are directed primarily to acquiring and cataloging initial record imagery, assembling basic data and reference material, establishing *localized* imagery interpretation keys and procuring maps required for in-country use. Terrain and trafficability studies, and support to military and civilian activities in internal development and relocation operations may be initiated on an as required basis.

c. The continuing development of *local* imagery interpretation keys on site becomes a necessity throughout subsequent phases of stability operations. These "local keys" are invaluable for keeping pace with changes in insurgent techniques and surveillance and reconnaissance countermeasures introduced in the environ or developed during the course of the insurgent operations. The urgency of intelligence needs coupled with the fleeting nature of insurgent forces and activities demands that local keys provide the timely means of making the initial detection breakthroughs in time to be of value to the local ground commanders.

11-9. Target Acquisition

Target acquisition involves the detection, location, and identification of ground targets in sufficient detail to permit the effective employment of weapons. It is discussed generally in FM 30-5 and more specifically in FM 6-121. In stability operations, combat surveillance furnishes much information for target acquisition, but because of the many difficulties in fixing the enemy, all means of target development including intelligence information from all available sources must be used in concert and maintained in detail by the G2 staff.

a. Target Folders. Individual targets range from the smallest and most rudimentary to the relatively large and complex. To facilitate planning, when an area or object has been selected as a potential target by the G2 Target Officer, a target folder is developed on it. The target folder includes all available intelligence about the target. The collection effort is directed toward acquiring the specific additional information to verify, refute, identify, or locate the suspect target. All acquisition means are considered for the collection effort, particularly long range reconnaissance patrols, aerial observers, and aerial imagery.

b. Pattern Analysis. Because of the difficulty in obtaining substantive targeting information the technique of pattern analysis may be required to pinpoint enemy locations. This technique requires detailed plotting of all information obtained on enemy activity within a specified area to include order of battle information, enemy movements, enemy initiated incidents, trail and road activity, construction and the readout from airborne sensors. The base for plotting can be 1:50,000 scale maps or mosaics at larger scales. All information, plotted over a period of time, forms patterns of activity which when interrelated during analysis assists in locating major enemy areas such as headquarters, troop concentrations, supply bases, and training areas, etc.

c. Aids in Support of Quick Reaction Attack. Airborne sensors which provide an immediate readout capability may be employed in surveillance roles in much the same manner as forward air controllers (FAC) or airborne artillery observers. That is, information obtained on a near real-time basis either by cockpit or data link readout can be immediately passed to tactical ground and air units for exploitation. Such a program involves close coordination and good communications between air-to-air and air-to-ground elements and other services as applicable. Most suitable areas of operations

are those areas or lines of communications generally restricted to enemy movement or other activity either by general enemy occupation or curfew imposition on civilian activity. Disruption to the normal patterns in the area may be considered an indication of insurgent activity and, depending on the degree of identification achieved, either further investigated or attacked by friendly elements immediately upon detection.

APPENDIX A

REFERENCES

(C) AR 10–122	United States Army Security Agency (U).
AR 95–51	Aerial Observer Training.
AR 310–31	Organization and Equipment Authorization Tables, Tables of Organization and Equipment.
AR 320–50	Authorized Abbreviations and Brevity Codes.
AR 380-series	Military Security and Classification.
AR 600–106	Aeronautical Designations and Flying Status for Army Personnel.
AR 604-series	Personnel Security Clearance.
AR 750–1	Maintenance Concepts.
AR 750–2	National Maintenance Points.
DA Pam 310-series	Military Publications Indexes.
DA Pam 750–1	Preventive Maintenance Guide for Commanders.
FM 1-series	Army Aviation.
FM 3–10	Employment of Chemical and Biological Agents.
(S) FM 3–10A	Employment of Biological Agents (U).
(C) FM 3–10B	Employment of Chemical Agents (U).
FM 5–20	Camouflage.
FM 5–30	Engineer Intelligence.
FM 5–34	Engineer Field Data.
FM 5–36	Route Reconnaissance and Classification.
FM 6–20–1	Field Artillery Tactics.
FM 6–121	Field Artillery Target Acquisition.
FM 6–135	Adjustment of Artillery Fire by the Combat Soldier.
FM 7–30	Infantry, Airborne, and Mechanized Division Brigades.
FM 11–20	Signal Operations, Theater of Operations.
FM 11–21	Tactical Signal Communications Systems, Army, Corps, and Division.
FM 11–40	Signal Corps Pictorial Operations.
FM 11–50	Signal Battalion, Armored, Infantry, and Infantry (Mechanized) Divisions.
FM 11–57	Signal Battalion, Airborne Division.
FM 11–86	Combat Area Signal Battalion, Army.
FM 11–92	Corps Signal Battalion and Airborne Corps Signal Battalion.

FM 11–95	Army Command Signal Operations Battalion.
FM 17–30	The Armored Division Brigade.
FM 17–36	Divisional Armored and Air Cavalry Units.
FM 17–95	The Armored Cavalry Regiment.
FM 19–30	Physical Security.
FM 21–26	Map Reading.
FM 21–30	Military Symbols.
FM 21–31	Topographic Symbols.
FM 21–60	Visual Signals.
FM 24–1	Tactical Communications Doctrine.
FM 24–18	Field Radio Techniques.
FM 24–21	Field Radio Relay Techniques.
FM 29–22	Maintenance Battalion and Company Operations (nondivisional).
FM 30-series	Military Intelligence.
FM 31–16	Counterguerrilla Operations.
FM 31–21	Special Forces Operations.
(S) FM 31–21A	Special Forces Operations—U.S. Army Doctrine (U).
FM 31–22	U.S. Army Counterinsurgency Forces.
FM 31–30	Jungle Training and Operations.
(C) FM 31–40	Tactical Cover and Deception (U).
FM 31–71	Northern Operations.
FM 31–72	Mountain Operations.
(C) FM 32–5	Signal Security (U).
(S) FM 32–10	United States Army Security Agency in Support of a Field Army (U).
(S) FM 32–20A	Electronic Warfare (Ground Based) (U).
FM 44–1	U.S. Army Air Defense Artillery Employment.
FM 57–35	Airmobile Operations.
FM 61–100	The Division.
FM 100–5	Operations of Army Forces in the Field.
FM 101–5	SOFM, Staff Organization and Procedure.
FM 101–10-series	SOFM Organization, Technical and Logistical Data.
JCS Pub 1	Dictionary of United States Military Terms for Joint Usage.
JCS Pub 2	Unified Action Armed Forces.
STANAG No. 2029 (Edition No. 2)	Methods of Describing Ground Locations, Areas, and Boundaries.
STANAG No. 2102	Offensive Air Support Operations Message Formats.
STANAG No. 3189 (Edition No. 2)	Titling of Air Reconnaissance, Air Survey, and Mapping Photography.
STANAG No. 3277 (Edition No. 4)	Air Reconnaissance Request Form.
STANAG No. 3377	Air Reconnaissance Intelligence Report Forms.
TOE 1–128T	Aerial Surveillance Company.
TOE 30-series	Intelligence Organizations.

TM 5–545	Geology.
(C) TM 11–5850–203–12	Organizational Maintenance Manual: Detecting Set, Infrared AN/AAS–14; Transmitting Set, Radio AN/ART–41 (Airborne Components of Surveillance System, Infrared AN/UAS–4) and Cable Assembly Sets, Test MX–4078/AAS–14 and MX 4079/ART–41(U).
(C) TM 11–5850–218–12	Organizational Maintenance Manual: Detecting Set, Infrared AN/AAS–14A and Transmitter, Radio AN/ART–41A (Airborne Components of Surveillance System, Infrared AN/UAS–4A) and Cable Assembly Sets, Electrical MX–7268/AAS–14A and MX–7270/UAS–4A(U).
TM 30–245	Image Interpretation Handbook.
TM 30–246	Tactical Interpretation of Air Photos.
TM 38–750	Army Equipment Record Procedures.

APPENDIX B

ABBREVIATIONS

ACE	Airspace Control Element.
ARLO	Air Reconnaissance Liaison Officer.
ARS	Air Reconnaissance Support.
CTOC	Corps Tactical Operations Center.
DASC	Direct Air Support Center.
DTOC	Division Tactical Operations Center.
ECM	Electronic Countermeasures.
EEI	Essential Elements of Information.
FAC	Forward Air Controllers.
FATOC	Field Army Tactical Operations Center.
FEBA	Forward Edge of the Battle Area.
FSE	Fire Support Element.
FTI	Fixed Target Information.
GIIR	General Imagery Interpretation Report.
GPIR	General Photo Interpretation Report.
GST	Ground Sensor Terminals.
HOTPHOTOREP	Hot Photo Report.
HOTREP	Hot Report.
II	Imagery Interpretation.
IIIR	Initial Imagery Interpretation Report.
INTSUM	Intelligence Summary.
IP	Initial Point.
IPIR	Initial Photo Interpretation Report.
IR	Infrared.
MAAG	Military Assistance Advisory Group.
MTI	Moving Target Indicator.
MIBARS	Military Intelligence Battalion Air Reconnaissance Support.
MISREP	Mission Report.
OIR	Other Information Requirements.
RATT	Radio Teletype.
SEASTAG	SEATO Standardization Agreement.
SLAR	Side Looking Airborne Radar.
SOLOG	Standardization of Certain Aspects of Operations and Logistics.
SSB	Single Side Band.
STANAG	NATO Standardization Agreement.
TACC	Tactical Air Control Center.
TACP	Tactical Air Control Party.
TAF	Tactical Air Force.
TASE	Tactical Air Support Element.

TIIF	Tactical Imagery Interpretation Facility.
TOC	Tactical Operations Center.
TWE	Technical Warfare Element.

APPENDIX C
EXAMPLE OF AG2 AIR COLLECTION PLAN
(Located in back of manual)

APPENDIX D

EXAMPLE OF AERIAL SURVEILLANCE AND RECONNAISSANCE APPENDIX, FIELD ARMY

Copy No. 9
Thirtieth Army
HEIMERSHEIM, (595120) GERMANY
100930 July 19__
XR 273

Appendix II (Aerial Surveillance and Reconnaissance) to Annex A (Intelligence) to Operation Order 6.

Map: GERMANY, 1:250000, AMS Series 508, Sheets K51, K52, K53, L51, L52, L53, M51, M52, M53.

1. Situation

a. Enemy. Annex A (Intelligence) to OPORD 6.

b. Friendly Forces. 373 Tactical Reconnaissance Wing, Ninth Tactical Air Force supports Thirtieth Army.

2. Mission

Reconnaissance elements of Ninth Tactical Air Force supports Thirtieth Army with 60 day, 15 night, and 4 electronic sorites per day from 170600 to 231800 May.

3. Execution

a. Concept. Maximum use will be made of Army aircraft for visual, photo, and electronic missions. TAF reconnaissance will be used for photo and visual missions beyond organic capabilities. Target program to receive priority of support. Priority of Support: Army artillery, 3 Corps, 1 Corps, 2 Corps.

b. Immediate Missions. Request via air request net as required. Use TAB A (Routes) TAB B (Areas), and TAB C (Point) overlays for visual requests.

c. Preplanned Missions. Thirteenth Army SOP.

d. 205th MIBARS. Plot all TAF photography, furnish daily master cover traces to army, corps, division; perform immediate interpretation of imagery flown in support of Army; conduct three flights daily between TAF recon bases, MIBARS, corps, divisions; other tasks as approved this HQ.

e. Imagery Interpretation Responsibilities.

(1) Divisions. All imagery produced organically; TAF imagery as requested.

(2) Corps. Same as division.

4. Administration

a. Distribution of imagery—Thirtieth Army SOP.

b. Procedures for submission of mission requests—SOP.

c. Other Imagery. Negatives of all photo, SLAR, and IR imagery produced at corps and division forwarded to this headquarters only on direction.

5. Command and Signal

a. Army Command Net to be used for submission of preplanned requests only.

b. Divisions monitor MIBARS Operations Net, if possible.

c. All units having capability monitor TAF in-flight report net.

d. Base plan index, frequencies, and call signs—current SOI.

Acknowledge.

CALLAN
LT GEN

Tabs: A (Routes)
B (Areas)
C (Points)
D (Preplanned Missions)

DISTRIBUTION: C

OFFICIAL

/s/ Jones
JONES
G2

57—863

APPENDIX E

MINIMUM SCALES FOR INTERPRETATION AND IDENTIFICATION

E–1. This table is designed to indicate minimum acceptable photographic scales for interpretation purposes. These minimum scales are the conclusions of a qualified panel of interpreters. It is not expected that they will be valid for every situation or that they will be in complete accord with the opinions or experiences of all who refer to them. They will, however, serve as a guide to the minimum scales at which object-images can be identified and analyzed. The many variables in equipment capabilities, atmospheric conditions, and film processing which affect an aerial photograph will tend to alter these scales. These scales are based on average quality photography. Improvements in such factors as image-motion compensation, film resolution, optics, and camera mount vibration, will permit the use of smaller scales.

E–2. Column I indicates the minimum scale required for recognition of an object class (e.g., motor vehicle, artillery piece, multiengine aircraft, etc.). Column II indicates the minimum scale necessary for a detailed analysis of specific objects within an object class (e.g., to distinguish 2½-ton trucks from 5-ton trucks; 105-mm Howitzer from a 155-mm Howitzer). The scales in Column II are presented for guidance of aerial surveillance and reconnaissance personnel in planning missions designed to photograph specific installations for detailed technical analysis, while those in Column I are the minimum scales for normal intelligence requirements. All scales refer to vertical stereo photo coverage. Low-level oblique photography or continuous-strip photography, when indicated, may also prove extremely helpful in conducting detailed analyses.

Subject	Breakdown	Minimum scale identification	Minimum scale technical analysis
Industry	Industries which lend themselves to interpretation; e.g., coke, iron, and steel, petroleum, aluminum, etc.		
	(Typical)	1/30,000	1/12,000.
	(Atypical)	1/15,000	1/8,000.
	(Petroleum and chemical plants require 1/6,000 for technical analysis.)		
	Industries which do not lend themselves to interpretation; e.g., ball-bearing, instrument electronics, etc.	1/10,000	1/6,000 & low-level oblique continuous strip.
Defenses	Coastal defenses guns	1/20,000	1/5,000 & low-level oblique.
	Heavy AA	1/15,000	1/3,000 & low-level oblique.
	Light AA	1/10,000	1/2,000 & low-level oblique.
Artillery	All types	1/10,000	1/2,000 & low-level oblique.
Vehicles	Motor vehicles	1/10,000	1/2,000.
Transportation	Rail	1/30,000	1/8,000.
	Road	1/30,000	1/5,000.
	(Reliable road surface conditions cannot be given from aerial photography.)		
	Inland waterways	1/30,000	1/10,000.
	Bridges (over 100′)	1/30,000	1/10,000 oblique.

Subject	Breakdown	Minimum scale identification	Minimum scale technical analysis
Utilities	Sewage	1/20,000	1/10,000.
	Water purification	1/20,000	1/10,000.
	Gas plants	1/20,000	1/8,000.
	Municipal thermal powerplant (typical)	1/30,000	1/10,000.
	Industrial thermal powerplant (typical)	1/15,000	1/8,000.
	Central heating plant (typical)	1/15,000	1/6,000.
	Hydroelectric powerplant	1/30,000	1/10,000.
	Powerlines (to trace)		1/6,000.
Terrain	Major landforms	No limit	1/20,000.
	Minor landforms	1/20,000	1/8,000.
Vegetation	(Scales given are applicable to optimum season only.)	1/20,000	1/8,000 & low-level oblique, continuous-strip.
Shipping	Naval vessels—BB, CV, CA, CL (or units larger than DD).	1/25,000	1/12,000.
	DD and minor combatant craft	1/15,000	1/7,000.
	SS	1/25,000	1/5,000 & low-level oblique.
	Merchant vessels:		
	Units above 200′	1/25,000	1/12,000.
	Units below 200′	1/15,000	1/5,000.
Shipping facilities	Ports	1/25,000	1/12,000.
	Docking facilities (piers, wharves, etc.)	1/20,000	1/8,000.
	Services (cranes, wharf trackage, etc.)	1/12,000	1/8,000.
Electronics	Radar:		
	Fixed	1/10,000	1/5,000.
	Mobile	1/8,000	1/5,000.
	Fire control	1/5,000	1/2,000.
	Communications:		
	Lattice masts	1/15,000	1/8,000.
	Stick masts	1/10,000	1/5,000.
	D/F:		
	Open adcock	1/18,000	1/11,000.
	Portable or unusual types	1/8,000	1/3,000.
	Navigation aids	1/18,000	1/11,000.
Airports	Major (with facilities and surfaced landing area).	No limit	1/10,000.
	Auxiliary (surfaced landing area—no facilities).	1/30,000	1/10,000.
	Auxiliary (unsurfaced landing area—no facilities).	1/10,000	1/10,000.
Aircraft	Wing span:		
	Under 40 ft	1/10,000	1/2,000.
	40 to 60 ft	1/12,000	1/3,000.
	60 to 100 ft	1/15,000	1/4,000.
	over 100 ft	1/20,000	1/5,000.
Personnel	Personnel activity	Unknown	1/5,000 comparative cover essential. Low-level oblique. Continuous-strip (along travel routes including trails).
	Individual personnel	Unknown	1/1,000 & low-level oblique continuous-strip.
Structures	Structural analysis	1/12,500	
	Urban area analysis	1/12,500	

Subject	Breakdown	Minimum scale identification	Minimum scale technical analysis
Photogrammetry	Tri-met (for air navigation charts)	1/60,000	
	Vertical (for mapping)	1/40,000	
	Supplemental (for air navigation charts and mapping).	1/20,000	

APPENDIX F

TITLING OF AIR RECONNAISSANCE, AIR SURVEY, AND MAPPING PHOTOGRAPHY

F-1. General

Each end of each roll of air reconnaissance, air survey, and mapping photography shall be titled. This detailed information will be placed immediately before the first negative and immediately after the last negative and will include complete details of each run over each separate target. The different items of information shall be arranged in the order shown below.

F-2. Titling Sequence

In order to prevent errors and false information the following format will be used for titling of air reconnaissance photography. Example: 121 F21 408(R) USAF 109 15 Jun 68 = 1630Z 36IN 12,000FT 4032N7607W WYLAM ATC 68-1 SECRET.

a. Item No. 1 (Negative Number) "121"—denotes the 121st exposure of a consecutive sequence of exposures. Exposures from each magazine shall be numbered consecutively. If more than one magazine of a single camera is exposed on a mission or sortie, the exposures shall be numbered consecutively from exposure one (1) of the first magazine to the last exposure of the last magazine. Simultaneous exposures on trimetrogen, split vertical, and convergent installations shall have their adjoining exposures matched and numbered identically.

b. Item No. 2 (Camera Position) "F21"—The following symbols shall be used to indicate camera position. Cameras will be numbered from port to starboard relative to the position photographed on the ground along the line of flight.

(1) *V-Vertical*—The single letter V shall indicate a single vertical installation of one camera not titled more than 5° from the vertical.

Note. To indicate the first of more than one vertical, the symbol V1 shall be used, and V2 to indicate the second vertical. The cameras shall be numbered from nose to tail and where two are side by side, the left or port camera shall be numbered first.

(2) *F-Fan*—The single letter F shall indicate a fan of two or more cameras. The F shall be followed by two digits; the first to indicate the number of cameras in the fan; the second to indicate the camera number.

(3) *C-Convergent Camera Installation*—The single letter C shall indicate two cameras, installed in separate mounts, in the same mount, or 2 cones in the same camera body, the photography from which is used as a unit for mapping purposes. Normally, the cameras shall be disposed so that their principal plane is in the direction of flight with one camera pointing forward and the other rearward. The C shall be followed by a single digit; 1 to indicate the forward looking camera and 2 to indicate the rearward looking camera, e.g., C1, C2 e.g., C1, C2

(4) *Oblique.*

P—Port (left)—A port facing oblique camera

S—Starboard (right)—A starboard facing oblique camera

N—Nose—A forward facing oblique camera

T—Tail—A rear facing oblique camera

H—Handheld

(5) *Depression Angle*—When oblique photography is titled, the depression angle in degrees measured from the horizontal plane of the aircraft shall be noted, between brackets,

immediately following the camera position. (Not applicable for handheld obliques.)

(6) When cameras with an odd number of mirrors are used, the letter "M" shall be inserted immediately after the camera position to indicate that the film must be reversed when printing. This is only to be shown with the titling information at the beginning and end of a roll.

c. Item No. 3 (Taking Unit) "408(R)"—denotes No. 408 Reconnaissance Squadron. Units shall utilize their official identifying symbol to identify their particular unit. The squadron detachment letter or number shall follow the squadron number. When a letter is used, the letter shall be separated from the "Service" symbol by a single hyphen, e.g., "58A–DAF." When a number is used, it shall be separated from the squadron number by a single hyphen, e.g., "58—15 USAR."

d. Item No. 4 (Service) "USAF"—denotes photographs made by the U.S. Air Force. Other services shall utilize appropriate symbols.

e. Item No. 5 (Sortie or Mission Number) "109"

f. Item No. 6 (Date) "15 JUN 68"—denotes the date photography is accomplished in the immediate area photographed.

g. Item No. 7 (Time Group and Zone letter) "1630Z."—Greenwich Mean time (Z) shall be used in every case.

h. Item No. 8 (Focal Length) "36IN" (Focal length of lens in inches (IN) or Centimeters (CM)—denotes equivalent focal length of lens indicated in inches or centimeters, except that all photography produced by calibrated cameras shall show the focal length in millimeters to the number of significant figures available data provide. Calibrated focal length shall be preceded by the letter C when the certificate of calibration is current, e.g., "C153.52MM" (Calibrated focal length of lens in millimeters (MM)).

i. Item No. 9 (Altitude) "1200FT"—denotes altitude above Mean Sea Level in feet (FT) or meters (M).

j. Item No. 10 (Kind of Photography)—The following symbols shall be used to indicate the kind of photography, other than reconnaissance:

R—Infrared.

C—Charting.

S—Survey and mapping (1st or highest order of accuracy).

C—Survey and mapping (2nd order of accuracy or below—Charting).

*SH—Survey and mapping horizontally controlled electronically.

*SV—Survey and mapping vertically controlled electronically.

*SHV—Survey and mapping horizontally and vertically controlled electronically

H—Historical

X—Experimental

**Note.* The appropriate electronic positioning data symbol shall be placed on each Survey and Mapping negative that is acceptable controlled, as determined by the taking unit.

k. Item No. 11 (Geographical Coordinates) —"4032N7607W." Coordinates given shall apply to the center of the photograph and be recorded to the nearest minute of latitude and longitude (based on Greenwich). The coordinates listed above indicate the geographic location of the first exposure of the roll or run used to photograph the target. Similarly, the coordinates shall be indicated for the last exposure of a roll or the last exposure of a run over each separate target. When coordinates are recorded on each individual negative or print, they shall always represent the center of the negative or print. If other coordinate systems are used, this fact shall be clearly stated.

l. Item No. 12 (Descriptive Title) "Wylam" —denotes the appropriate place or subject of the photograph.

m. Item No. 13 (Project Number, year assigned, code name) "TAC 68–1"—denotes the year (1968) and the first project assigned by the highest echelon directing the project.

n. Last Item (Security Classification) "SECRET"—denotes the security classification assigned to the photography in accordance with existing regulations or directives.

F–3. Titling of Air Survey and Mapping Photography

In addition to the information contained in paragraph F–2 above, all air survey and mapping photography will have additional items of information included. This information will follow item 13 (para F–2*m*).

a. Item 14. Camera type and serial number.

b. Item 15. Cone serial number.

c. Item 16. Lens type and serial number.

d. Item 17. Magazine type and serial number.

e. Item 18. Type and manufacture of photographic film and type of photographic filter used.

f. Item 19. Mean terrain elevation above Mean Sea Level (MSL).

F–4. Special Instructions

a. Items 1 through 6 shall form the negative/frame reference and shall be followed by a double hyphen (=). When operational factors prevent addition of the full titling data, the following obsolete minimums will apply:

(1) Frame Number.
(2) Sortie/Mission Number.
(3) Date Time Group (Z) DTG (Z).

b. Items 1 through 9 shall be the minimum titling on each reconnaissance photograph. Item 10 shall appear on each survey and mapping negative, accompanied by acceptable electronic positioning data.

c. The appropriate security classification shall be shown on all material produced from the original role of film.

d. If additional data must be inserted, it shall immediately precede the security classification which shall be the last item listed.

e. All titling shall be permanently marked in clearly legible capital letters and in such a position as to obscure minimum detail.

INDEX

	Paragraph	Page
Aerial imagery security classification	9–14	9–8
Aerial surveillance and reconnaissance:		
Communications	6–2—6–4	6–1—6–6
Employment	3–1—3–5	3–1—3–2
Missions	4–2, 4–3	4–1
Operational aids:		
Annex to unit intelligence SOP	5–15	5–12
Appendix to intelligence annex of unit operations order	5–17	5–13, App D, D–1
Area overlay (fig. 5–8)		
Base plans	5–19*g*	5–15
General	5–13	5–12
G2 Air collection plan	App C	C–1
G2 Air situation map	5–16	5–12
Master cover trace	5–20	5–16
Point overlay (fig. 5–9)	5–19*f*	5–15
Route overlay (figs. 5–6, 5–7)	5–19*d*	5–13
Section SOP	5–14	5–12
Planning:		
Daily planning conference	2–4*a*(2)	2–2
Day-to-day	5–7	5–4
Factors (fig. 5–1)	5–3	5–3
General concept	5–1	5–1
Long-range	5–6	5–4
Phases	5–4	5–3
Principles	5–2	5–1
Sequence	5–5	5–3
Request:		
Control	3–6*b*(1)	3–2
Form	5–21	5–16
General	5–21	5–16
Immediate	5–4	5–3
Overlay	5–22	5–17
Preplanned	4–5	4–2
Priorities	5–2*d*	5–1
Procedure, immediate	5–9	5–6
Procedure, preplanned	5–8	5–6
Stability operations:		
Factors affecting	11–3	11–2
Operations	11–4	11–2
Permanent records imagery	11–6	11–3
Requirements for effective use	11–3	11–2
Visual aerial surveillance	11–5	11–2
Airborne infrared missions	5–12*c*, 8–18	5–12 8–10
Airborne radar missions	5–12*b*, 8–17	5–10, 8–10
Air Force air request net	6–2*c*	6–1
Air Force command net	6–2*e*	6–3
Aircraft capabilities	5–11	5–10
Aircraft maintenance section, aerial surveillance company	8–3*f*	8–4
Airfield service section, aerial surveillance company	8–3*f*	8–4
Air reconnaissance liaison officer (ARLO):		
ARLO/G2 Air representative Reports	7–9*d*, 10–4, 10–5*b* 10–11, 10–12*b*	7–5, 10–1, 10–4, 10–6
Allied support	3–4	3–2
Annex to unit intelligence SOP	5–15	5–12
Appendix to intelligence annex of unit operations order	5–17, App D	5–13, D–1
Area overlay (fig. 5–8)	5–19	5–13
Area search (fig. 8–7)	4–8*a*(1)	4–2
Area studies	9–3	9–1
Army air request net	6–2*a*	6–1
Army aviation support	3–5	3–2
Army Security Agency	5–30	5–22
Artillery adjustment	4–8*a*(4)	4–3
Aviation aerial surveillance company:		
Capabilities	8–5	8–4
Control	8–9	8–5
Employment	8–4, 8–13	8–4, 8–5

	Paragraph	Page
General planning	8–11	8–5
Limitations	8–6	8–4
Mission	8–2	8–1
Mission assignments	8–12	8–5
Avionics repair section, aerial surveillance company	8–3*f*(3)	8–4
Base plans	5–19*g*	5–15
Battalion HHC, MIBARS	7–6	7–3
Border surveillance	8–17*c*(2)	8–10
Briefings:		
Aerial surveillance company	8–14	8–8
Conduct	10–4	10–1
General briefing (fig. 10–1)	10–5	10–1
Materials	10–7	10–3
Preflight	10–6	10–3
Camera repair section, aerial surveillance company	8–3*e*(5)	8–3
Capabilities, aerial surveillance company	8–5	8–4
Capabilities of aircraft	5–11	5–10
Capabilities of sensors	5–12	5–10
Categories of permanent record imagery	4–11	4–5
Classification:		
Aerial imagery	9–14	9–8
Aerial surveillance requests	4–4	4–1
Derivative classification	9–16	9–9
Marking, storage, control, and destruction of classified imagery	9–15	9–9
Coastal surveillance	8–17*c*(2)	8–10
Collection means	1–4*a*, 4–7	1–2, 4–2
Collection Plan, G2 Air	App C	C–1
Collection responsibility	2–1*b*	2–1
Command, aerial surveillance company	8–8	8–4
Communications:		
Aerial surveillance company (fig. 8–3)	8–10	8–5
Air Force air request net	6–2*c*	6–1
Air Force command net	6–2*c*	6–1
Army air request net	6–2*a*	6–1
Corps G2 Air/aerial surveillance company operations net (fig. 6–3)	6–3*b*	6–3
Division air request net	6–2*b*	6–1
General	6–1	6–1
MIBARS operations net (fig. 6–2)	6–3*a*	6–3
New communications nets	6–3	6–3
Other systems	6–4	6–6
Spot report receiver system	6–2*d*	6–2
Communications section, aerial surveillance company	8–5*a*(2)	8–4
Company headquarters section:		
Aerial surveillance company	8–3*b*	8–1
MIBARS	7–6*f*	7–4
Concealment analysis	4–11*c*(3)	4–6
Concept of aerial surveillance and reconnaissance employment:		
Allied support	3–4	3–2
Army aviation support	3–5	3–2
General	3–1	3–1
Navy and Marine Corps support	3–3	3–1
Tactical Air Force	3–2	3–1
Concept of employment, aerial surveillance company	8–13	8–5
Concept of employment, MIBARS:		
Battalion HHC	7–6	7–3
Communications	7–8	7–5
General	7–4	7–3
Location	7–5	7–3
MI Detachment	7–7	7–4
Operations	7–10	7–5
Planning	7–9	7–5
Conduct of briefing and debriefings	10–4	10–1
Confirmatory photography	8–16*e*	8–9
Contact reconnaissance	4–8*a*(3)	4–3
Contents of target folder	9–12	9–8
Continuous strip photography	4–9*b*(2)(*c*)	4–4
Control, aerial surveillance company	8–9	8–5
Control, aerial surveillance and reconnaissance requests	3–6*b*(1)	3–2
Control and destruction of classified imagery	9–15	9–9
Coordination:		
Army Security Agencies	5–30	5–22
Corps	2–4*b*, 5–29	2–2, 5–21
Division	2–4*c*, 5–29	2–2, 5–21
Field Army	2–4*a*, 5–28	2–2, 5–21
General	5–27	5–21
Other agencies	2–4*d*	2–3
Corps aerial surveillance intelligence cycle	3–6*c*	3–4
Corps and division coordination	5–29	5–21
Corps G2 Air:		
General functions	2–3	2–1
Location	2–2*c*	2–1
Organization	2–2*b*	2–1
Corps imagery interpretation	9–4*b*	9–2
Cover and deception	5–2*e*	5–3
Cover traces	7–10*g*	7–9
Daily aerial surveillance plan	5–18	5–13
Daily journal	10–11*a*	10–4
Daily planning conference	2–4*a*(2)	2–2

	Paragraph	Page
Damage assessment	9–6*b*(7)	9–3
Day-to-day planning	5–7	5–4
Debriefing:		
Checklist (fig. 10–2)		
Conduct	10–10	10–4
Planning	10–9	10–4
Purpose	10–8	10–4
Reports	10–12	10–5
Deception analysis	4–11*c*	4–5
Deception and cover	5–2*e*	5–3
Delivery platoon, MIBARS	7–6*c*(2)	7–3
Deployment of MIBARS detachments	7–9*d*	7–5
Derivative classification	9–16	9–9
Description, method	8–20	8–16
Destruction of classified imagery	9–15*d*	9–9
Detailed image interpretation report	9–7*a*	9–3
Detailed intelligence record	4–11*c*	4–5
Development of interpretation capabilities in stability operations	11–8	11–4
Dissemination means	1–4*b*	1–2
Division:		
Aerial surveillance intelligence cycle	3–6*b*	3–2
Aerial surveillance log (fig. 5–2)		
Air request nets	6–2*b*	6–1
Image interpretation support	9–4*c*	9–2
New communications nets	7–9*c*	7–5
Division and corps coordination	5–29	5–21
Division G2 Air:		
Location	2–2*b*	2–1
Organization	2–2*c*	2–1
Personnel augmentation	2–2*d*	2–1
Duties of image interpreters	9–2	9–1
Economy of effort	5–2*b*	5–1
Effectiveness of imagery interpretation	9–3	9–1
Enemy situation	5–3*a*	5–3
Essential elements of information	5–2*a*	5–1
Ferreting	4–10	4–5
Field Army:		
Aerial surveillance intelligence cycle	3–6*b*	3–2
Coordination	5–28	5–21
Field Army G2 Air:		
Functions	2–4*a*	2–2
Image interpretation support	9–4*a*	9–1
Location and organization	2–2	2–1
Flexibility	5–2*c*	5–1
Friendly and enemy situation	5–3*a*	5–3
General briefing	10–5	10–1
General imagery interpretation report	9–10	9–8
General intelligence record	4–11*b*	4–5
Ground sensor terminal and terminal teams	8–3*d*(4)	8–3
G2 Air:		
Communications	6–2, 6–3	6–1, 6–3
Coordination:		
Army Security Agency	5–30	5–22
Corps and division	5–29	5–21
Field army	5–28	5–21
General:	5–27	5–21
General:		
Aerial reconnaissance request	5–21	5–16
Aerial surveillance intelligence cycle	3–6	3–2
General functions	2–3	2–1
Location and organization	2–2	2–1
Mission status board	5–23	5–21
Specific functions	2–4	2–2
Staff responsibilities	2–1	2–1
Planning:		
Day-to-day	5–7	5–4
Factors	5–3	5–3
Long-range	5–6	5–4
Phases	5–4	5–3
Principles	5–2	5–1
Sequence	5–5	5–3
Situation map	5–16	5–12
Hand-held camera photography	11–6	11–3
Headquarters, aerial surveillance company	8–3*b*	8–1
Headquarters and headquarters company, MIBARS	7–3*b*	7–1
Hot report (fig. 9–3)	9–8	9–5
Image interpreter:		
Duties	9–2	9–1
General	9–1	9–1
Imagery:		
Classification:		
Derivative	9–16	9–9
General	9–14	9–8
Marking, storage, control, and destruction of classified imagery	9–15	9–9
Interpretation:		
Effectiveness	9–3	9–1
Support	9–4	9–1
Permanent record:		
Categories	4–11	4–5
Types	4–9	4–3

	Paragraph	Page
Tactical use:		
General	9–5	9–2
Specific	9–6	9–2
Imagery interpretation:		
Section:		
Aerial surveillance company	8–3c(2)	8–1
MIBARS	7–6c(1)	7–3
Reports:		
Format (fig. 9–2)	9–7b	9–3
General (fig. 9–1)	9–7a	9–3
General report	9–10	9–8
Hot report (fig. 9–3)	9–8	9–5
Immediate report (fig. 9–4)	9–9	9–7
Immediate missions	4–6	4–2
Independent corps G2 Air	2–4a	2–2
Inflight report (fig. 10–3)	10–12	10–5
Infrared:		
General	5–12c	5–12
Imagery	4–9c	4–4
In stability operations	11–6d	11–13
Missions	8–18	8–10
Independent operations	2–2d	2–1
Initial record imagery	4–11a	4–5
Initiation of requests	5–21	5–16
Intelligence:		
Cycle for aerial surveillance (fig. 3–1)	3–6	3–2
Production	3–6b(3)	3–2
Record	4–11	4–5
Liaison officer (see ARLO/G2 Air representative)		
Library and reports section (MIBARS)	7–6c(4)	7–4
Limitations, aerial surveillance company	8–6	8–4
Limitations, visual aerial surveillance	4–8b	4–3
Location and organization, G2 Air	2–2	2–1
Long-range planning	5–6	5–4
Mapping photography	4–9b(2)(e)	4–4
Marine Corps support	3–3	3–1
Marking, storage, control and destruction of classified imagery	9–15	9–9
Master cover trace	5–20	5–16
Materials for briefing	10–7	10–3
Means of collecting and processing imagery	1–4	1–2
Military intelligence battalion, aerial reconnaissance support (MIBARS) (fig. 7–1):		
Battalion HHC	7–6	7–3
Communications (fig. 6–2)	7–8	7–5
Detachment	7–7	7–4
General	1–4b(2)	1–2
Location	7–5	7–3
Mission	7–2	7–1
Operations	7–10	7–5
Organization and functions	7–3	7–1
Planning	7–9	7–5
Mission:		
Aerial surveillance company	8–2	8–1
Accomplishment	3–6b(2)	3–2
Assignments	8–12	8–5
Folders	5–24	5–21
Numbers	5–8d	5–6
Operating techniques:		
Inflight reports	8–15	8–9
Multiple sensor	8–19	8–15
SLAR	8–17	8–10
Visual/photographic (fig. 8–4)	8–16	8–9
Report (fig. 10–4)	10–12b(2)	10–6
Status board (figs. 5–3, 7–4)	5–23	5–21
Support personnel briefing	8–14	8–8
Missions, aerial surveillance and reconnaissance:		
Aerial reconnaissance	4–3	4–1
Aerial surveillance	4–2	4–1
General	4–1	4–1
Immediate	4–6	4–2
Preplanned	4–5	4–2
Multiple sensor operations	8–19	8–15
Navy support	3–3	3–1
Nets:		
Current (fig. 6–1)	6–2	6–1
New	6–3	6–3
Oblique analysis	4–11c(2)	4–6
Oblique photography	4–9b(1)(b)	4–3
Operational aids, G2 Air (fig. 5–5):		
Aerial surveillance and reconnaissance annex to unit intelligence SOP	5–15	5–12
Aerial surveillance and reconnaissance appendix to the intelligence annex of unit operations order	5–17, App D	5–13, D–1
Aerial surveillance routes, areas, and point overlays	5–19	5–13
Aerial reconnaissance requests	5–21	5–16
Daily aerial surveillance plan	5–18	5–13
General	5–13	5–12
G2 Air situation map	5–16	5–12
Imagery interpretation reports	5–26	5–21

	Paragraph	Page
Master cover trace	5–20	5–16
Mission folders	5–22	5–17
Mission status board (figs. 5–3, 7–4)	5–21	5–16
Pilot trace	5–25	5–21
Request overlay	5–22	5–17
Section SOP	5–14	5–12
Operations, MIBARS	7–10	7–5
Operations platoon, aerial surveillance company	8–3*c*	8–1
Operations and intelligence section, MIBARS	7–6*c*	7–3
Organic Army aerial collection means	1–4*a*(1)	1–2
Organization, aerial surveillance company (fig. 8–1)	8–3	8–1
Organization, G2 Air	2–2*c*	2–1
Organization, MIBARS	7–3	7–1
Panoramic photography	4–9*b*(*1*)(*c*)	4–3
Peculiarities of battalion staff, MIBARS	7–6	7–3
Permanent record imagery:		
Categories	4–11	4–5
Stability operations	11–6	11–3
Types	4–9	4–3
Personnel augmentation, G2 Air	2–2*d*	2–1
Personnel briefing, mission support	8–14*c*	8–8
Photographic interpretation reports:		
Hot report	9–8	9–5
General report	9–9	9–7
Immediate report	9–10	9–8
Photographic reproduction equipment, MIBARS	7–9*c*	7–5
Photography, types, classification	4–9*b*	4–3
Photolab, aerial surveillance company	8–3*e*(4)	8–3
Pilot trace	5–25	5–21
Plan, daily aerial surveillance	5–18	5–13
Planning, aerial surveillance and reconnaissance:		
Day-to-day	5–7	5–4
Factors (fig. 5–1)	5–3	5–3
Long-range	5–6	5–4
Mission assignment	8–12	8–5
Phases	5–4	5–3
Principles	5–2	5–1
Sequence	5–5	5–3
Planning of debriefings	10–9	10–4
Planning, MIBARS	7–9	7–5
Platforms	5–11	5–10
Point overlay (fig. 5–9)	5–19*f*	5–15
Preflight briefing	10–6	10–3
Preplanned missions	4–5	4–2
Preplanned request procedures	5–8	5–6
Priorities, aerial surveillance requests	5–2*d*	5–1
Processing and disseminating means	1–4*b*	1–2
Purpose of briefing and debriefings	10–1, 10–8	10–1, 10–4
Radar (see SLAR)		
Radio, aerial surveillance company (fig. 8–3)	8–10*c*	8–5
Reconnaissance missions	4–3	4–1
Records, ARLO/G2 Air representative	10–11	10–4
Reports, ARLO/G2 Air representative	10–12	10–5
Reports, image interpretation (fig. 9–1):		
Format (fig. 9–2)	9–7*a*	9–3
General	9–7	9–3
Hot report (fig. 9–3)	9–8	9–5
Immediate report (fig. 9–4)	9–9	9–7
Reports and library sections, MIBARS	7–6*c*(4)	7–4
Reproduction section, additional, MIBARS	7–6*g*	7–4
Reproduction section, MIBARS	7–6*c*	7–3
Request overlay	5–22	5–17
Request procedures:		
Immediate	5–9	5–6
Preplanned	5–8	5–6
Requests, types:		
General	4–4	4–1
Immediate	4–6	4–2
Preplanned	4–5	4–2
Requirements for effective aerial surveillance and reconnaissance in stability operations	11–3	11–2
Responsibility, aerial surveillance and reconnaissance	1–3	1–2
Responsibility, daily aerial surveillance plan	5–19*c*	5–13
Route overlays (figs. 5–6, 5–7)	5–19*d*	5–13
Route reconnaissance (fig. 8–6)	4–8*a*(3)	4–3
Scale minimums for interpretation and identification	App E	E–1
Scale of coverage, stability operations	11–6*b*	11–3
Section SOP, G2 Air	5–14	5–12
Security classification of aerial imagery:		
Derivative classification	9–16	9–9
General	9–14	9–8
Marking, storage, control, and destruction	9–15	9–9

	Paragraph	Page
Sensor:		
Capabilities:		
Platforms	5–11	5–10
Sensors	5–12	5–10
Collection means:		
Electronic intelligence reconnaissance	4–10	4–5
General	4–7	4–2
Permanent record imagery	4–9	4–3
Operations, multiple	8–19	8–15
Selection guide (fig. 5–4)	---	5–11
Separate armored, mechanized, and infantry brigades	2–4*d*	2–3
Sequence of planning, aerial surveillance company	5–5	5–3
Service platoon, aerial surveillance company	8–3*f*	8–4
Side-looking airborne radar (SLAR):		
General	4–9*d*	4–4
Planning	5–12*b*	5–10
Techniques	8–17	8–10
Signal intelligence (SIGINT)	5–30*a*	5–22
Signal platoon, aerial surveillance company	8–3*e*	8–3
Situation map, G2 Air	5–16	5–12
Specific duties, imagery interpreters	9–2	9–1
Specific planning, aerial surveillance and reconnaissance:		
Day-to-day	5–7	5–4
Long-range	5–6	5–4
Specific search	4–8*a*	4–2
Specific tactical uses of imagery	9–6	9–2
Spot report receiver system	6–2*d*	6–2
Staff responsibilities, G2 and G2 Air	2–1	2–1
Strip photography	4–9*b*(2)(*c*)	4–4
Summary report	10–12*b*(3)	10–6
Support:		
Allied	3–4	3–2
Army aviation	3–5	3–2
Navy and Marine Corps	3–3	3–1
Tactical Air Force	3–2	3–1
Surveillance missions	4–2	4–1
Surveillance platoon, aerial surveillance company	8–3*d*	8–3
Tactical Air Force support	3–2	3–1
Tactical imagery interpretation facility (TIIF)	4–11	4–5
Tactical uses of imagery:		
General	9–5	9–2
Specific	9–6	9–2
Target acquisition	11–9	11–4
Target folders	9–11, 9–13, 11–9*a*	9–8, 11–4
Techniques of aerial surveillance and reconnaissance operations:		
Infrared	8–18	8–10
Multiple sensor	8–19	8–15
SLAR	8–17	8–10
Visual photographic	8–16	8–9
Terrain	5–3*c*	5–3
Type of mission and/or sensor collection means:		
General	4–7	4–2
Permanent record imagery	4–9	4–3
Visual aerial surveillance	4–8	4–2
Type of requests:		
General	4–4	4–1
Immediate	4–6	4–2
Preplanned	4–5	4–2
Unit capabilities, aerial surveillance company	8–5	8–4
Unit limitations, aerial surveillance company	8–6	8–4
Vertical analysis	4–11*c*(1)	4–6
Vertical pinpoint	4–9*b*(2)(*a*)	4–3
Visual aerial surveillance	4–8	4–2
Visual aerial surveillance in stability operations	11–5	11–2
Visual/photographic mission techniques	8–16	8–9
Weather	5–3*d*	5–3
Weather reconnaissance	4–10	4–5
Wire communications, aerial surveillance company (fig. 8–2)	8–10*b*	8–5

By Order of the Secretary of the Army:

W. C. WESTMORELAND,
General, United States Army,
Chief of Staff.

OFFICIAL:

KENNETH G. WICKHAM,
Major General, United States Army,
The Adjutant General.

Distribution:

To be distributed in accordance with DA Form 12–11 requirements for Aerial Surveillance-Reconnaissance, Field Army.

APPENDIX C

EXAMPLE OF A G2 AIR COLLECTION PLAN

EEI	INDICATIONS	BASIS FOR SPECIFIC ORDERS OR REQUESTS	12 JULY						13 JULY						14 JULY						Remarks ** With confirming photography
			Type Recon & Sensor	Frequency of Recon	TOT	Scale Photo & Nr Prints	Hot Reports	Army Req Nr	Type Recon & Sensor	Frequency of Recon	TOT	Scale Photo & Nr Prints	Hot Reports	Army Req Nr	Type Recon & Sensor	Frequency of Recon	TOT	Scale Photo & Nr Prints	Hot Reports	Army Req Nr	
1. What are enemy dispositions? Special Attn	a. Location & est strength of enemy in contact, reserves, arty	(1) Report location, strength, and activities of troops NYSTAD–THORN Ridge (Div Obj)	Photo[1] & Visual[2]	P–One time V–4 hrs	P–1000 V–0600–1600	1:5,000 2 sets	No Yes		Visual[2]**	2 hrs	0600–1800	1:7,500 1 set	Yes		Visual	1 hr	0600 Obj sec	– – –	Yes		1. Defense overlay DR097540, DR155571, DR150582, DR900550 2. Subsequent visual – confirmatory photo of major changes
		(2) Rpt loc and str occ strong pts vic Hill 609 (1551) & Hill 406 (1151)	Photo[3] & Visual[4]	P–One time V–2 hrs	P–1100 V–0600–2000	1:5,000 2 sets	No Yes		Visual **	1 hr	0600 2000	1:7,500 1 set	Yes		Visual	Continuous	0500 until Obj sec	– – –	Yes		3. Defense overlay of area 4. Subsequent visual; confirming photo significant changes
	b. Presence of obstacles	(10) Rpt loc arty & mortar psns in zone – incl unoc and number pcs.	Visual **	Continuous all missions spec emphasis. See[5]		1:7,500 1 set	Yes		Visual **	Continuous all missions spec emphasis. See[5]		1:7,500 1 set	Yes		Visual	Continuous all missions spec emphasis. See[5]			Yes		5. Points for specific search developed in coordination w/chief, FSDE
		(11) Rpt loc & extent obstacles & road blocks along N–S rds DR1247–1156 & DR1647–1456.	Visual **	4 hrs	0940–1630	1:7,500 1 set	Yes		Visual **	4 hrs	0940–1940	1:7,500 1 set	Yes		Visual	1 hr	0500 until obj sec	– – –	Yes		
	c. Dumping, ammunition & engr supplies	(12) Rpt evid fortifications bldg in zone, emphasis St ELM (DR1351) & PRUTH (DR 1454).	Photo	One time	1300	1:10,000 7 sets	No		Photo	One time	1000	1:10,000 1 set	No								
		(13) Rpt loc CPs, supply and evac instls in div zone N of St ELM (DR1351) depth line DR09580215	Visual **	4 hrs	0600–2000	1:7,500 1 set	Yes		Visual **	4 hrs	0600–2000	1:7,500 1 set	Yes		Visual	2 hrs	0500 until obj sec	– – –	Yes		
2. Will enemy attack prior 140430	a. Movement hostile units forward	(16) Rpt volume & type traffic across HOST Canal and rds ldg S from NYSTAD & THORN.	Visual	1 hr	0600–2000	– – –	Over 10 vehicles		Visual	1 hr	0600–2000		Over 10 veh.		Visual	Continuous	0500 until obj sec		Over 5 veh		
		(17) Rpt mvt tnk unit (est div) vic DR 1273.	Visual[6]	4 hrs	0600–2400	– – –	Yes		Visual[6]	2 hrs	0000 2400		Yes		Visual	1 hr	0000–2400		Yes		6. TAC Air Reconnaissance – special emphasis possible air strike; keep close contact
		(18) Night and inclement weather coverage (some items as 16 & 19)	SLAR	2 hrs	2000–0600	– – –	No		SLAR	2 hrs	2000–0600		No		SLAR[7]	2 hrs	2000–0600		Yes		7. Coverage shifts to area North Line DR 0958, DR 2158
	b. Increased air reconnaissance	(19) Rpt amount & type air activity in zone	All Flights																		
	c. Replacement or reinforcement	(20) Rpt mvt on roads North FEBA	Visual[8]	1 hr	0600–2000	– – –	Over 10 veh.		Visual[8]	1 hr	0600 2000	– – –	Over 10 veh.		Visual[8]	1 hr	0500–2000		Over 5 veh		8. Combine w/item 16; after objective taken coverage shifts to area N line DR 0958, DR 2158
3. Can enemy w/draw over HOST Canal	a. condition bridges & alternate crossing points	(26) Rpt alt crossing points HOST Canal & condition bridges DR 1157 and DR 1657	Photo	One time	1400	1:10,000 2 sets	No		Visual **	2 hrs	0600	1:10,000 1 set	Yes		Visual	1 hr	0500 until obj sec	– – –	Yes[9]		9. Hot rpts on attempts to repair or cross canal–probable lucrective arty or close air support tgt

3000017383

PENTAGON LIBRARY
3000017383